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MYCOSIS FUNGOIDES AS A CLINICAL AND PATHOLOGIC NONEXISTENT *

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The condition familiarly known as mycosis fungoides is one of the most confused and confusing to be encountered in the domain of medicine. According to Fraser,[1] at least nine different views have been advanced to explain its nature: that it is a granuloma; a cutaneous form of lymphadenoma; a lymphosarcoma; a condition midway between a granuloma and a sarcoma; an alymphemic lymphomatosis; a sarcoma engrafted on a previous dermatosis, as psoriasis or eczema; the last phase of a series of dermatoses that includes pityriasis rosea and the parapsoriases; a lymphoma of the skin, or, finally, the cutaneous manifestations of systemic disease. I am quoted as sponsor for the last named theory, in which capacity I am still impenitent.

Mycosis fungoides comes down as a legacy from that epoch in the evolution of the knowledge of cutaneous disorders when objective features exclusively were depended on as a basis for classification. Later, the use of histologic methods denoted an attempt to emerge from the confusion imposed by the terrifying descriptions of the objective dermatologist. Unfortunately, these methods were applied to the study of the changes in the skin alone. In this way the medical profession was provided with a heterogeny of histologic changes, varying from those of the premycosic eruptions to those of the different histologic types of tumors and tumor-like lesions of the skin. In more recent times, mycosis fungoides has been investigated from the standpoint of alterations in the deeper parts, and at least a degree of order has thus been established. On the basis of evidence so adduced, mycosis fungoides, I venture to suggest, is neither a clinical nor a pathologic entity, but a condition sometimes preceded by an array of eruptions of divergent character and attended or followed by tumors or tumor-like formations which may or may not resemble one another clinically. In some cases, for example, the ulcerative lesions are mushroom-shaped with thick rounded edges; in others the edges are sharply defined, and the ulcer is crater-like. Microscopic examination of these nodular formations, ulcerated or nonulcerated, shows three different histologic types.

* Submitted for publication, March 23, 1931.

1. Fraser, J. F.: J. Cutan. Dis. **35**:793, 1917.

In one set of cases, the histologic alterations in the cutaneous plaques and nodules are the same as those in Hodgkin's disease and the lymph nodes present an identical histology. At autopsy in two of Fraser's [1] cases, changes were found in the cervical, axillary, inguinal, peribronchial and retroperitoneal groups, the individual nodes varying in size from 1 to 5 cm. In both cases, microscopic examination of the cutaneous nodules and lymph nodes and, in one case, of the bone marrow over a wide distribution revealed structural alterations that could not be distinguished from those of Hodgkin's disease. In a patient at Bellevue Hospital, from one of whose cutaneous tumors sections were removed for microscopic examination, I also encountered the histologic changes of Hodgkin's disease.

In a second group of cases of mycosis fungoides the tumors in the skin and in the lymph nodes present the histology of a reticulum cell sarcoma, that is to say, a malignant growth derived from the connective tissue framework. Two such cases have come under my observation at Bellevue Hospital. One was that of a woman who exhibited multiple ulcerative and nonulcerative nodules in the scalp, neck, chest and upper abdominal wall, together with erythematous patches. This case was regarded clinically as a typical example of mycosis fungoides. At autopsy, innumerable enlarged lymph nodes were found in the neck and the axillae, around the pancreas and in the mesentery and the pelvis. The spleen was enlarged and weighed 675 Gm. The right psoas muscle was almost completely replaced by infiltrating tumor tissue, and the lower right rectus abdominalis was similarly involved. The right ovary was largely replaced by new growth. Microscopic examination of the tissues named revealed a reticulum cell sarcoma, the prevailing cell in which was slightly larger than a small lymphocyte, its nucleus densely chromatic, pyknotic and crenated. In some of the microscopic preparations this type of cell was associated with similar but smaller numbers of cells that were noticeably larger than the small lymphocyte, their nuclei likewise densely chromatic and irregular in outline. In a second case the disarticulated arm of a man exhibited five or six mushroom-shaped ulcerative lesions in the skin and two nonulcerative nodules, while the muscular tissues of practically the entire extremity were infiltrated by whitish tumor tissue, microscopic examination of which showed a reticulum cell sarcoma of identical histology with the growth just mentioned. In this case, also, the cutaneous lesions were regarded clinically as typical of mycosis fungoides. Death followed the operation of removal of the diseased tissue, but autopsy was not obtained.

In a third group of cases the histologic changes in the cutaneous tumors and in the lymph nodes are those of lymphosarcoma. In this type of case leukemic transformation may occur. Kaposi [2] described a condition under the title of lymphodermia perniciosa in which the

2. Kaposi: Med. Jahrb. **15**:129, 1885.

changes in the skin are so noticeably like those of mycosis fungoides that the French dermatologists classify it as such. Kaposi's original case was marked by generalized edematous and desquamative eczema with ulcerative cutaneous and subcutaneous tumors made up microscopically of lymphoid cells; by multiple lymphadenopathies and enlargement of the spleen, and, near death, by a lymphocytosis of 125,000 cells. At autopsy, there were, in addition, lymphoid nodules in the lungs and diffuse lymphocytic infiltration of the bone marrow. In a case that came under my observation at Bellevue Hospital almost identical changes were found. The patient was a woman who presented a tumor in the neck of three years' duration. The mass was irregularly rounded and nodular and extended from the occiput downward into the posterior cervical region. The skin over it had undergone ulceration. Immediately adjacent to the growth were numbers of enlarged lymph nodes, which were matted together. The axillary nodes on the same side were greatly enlarged and fused, a condition which, according to the patient, came on two years after the growth in the neck. The inguinal nodes were similarly involved, commencing, the patient stated, two months after the axillary enlargement. The skin showed the changes of diffuse exfoliative dermatitis. A dermatologist who saw her made the diagnosis of mycosis fungoides. At the time of the patient's admission, the blood showed 15,800 leukocytes, of which 70 per cent were polymorphonuclear neutrophils, 22 per cent small lymphocytes and 2 per cent large lymphocytes. Three weeks before death the white cells numbered 164,000, of which 28 per cent were polymorphonuclear neutrophils, 52 per cent large mononuclear cells of the lymphocytic type, 14 per cent small lymphocytes, 5 per cent eosinophils and 1 per cent myelocytes. At autopsy, in addition to the changes synopsized, the tonsils, the anterior mediastinal and peribronchial lymph nodes and the peripancreatic, retroperitoneal and mesenteric nodes were enlarged and exceedingly numerous. Microscopic examination showed replacement of the nodes by diffuse collections of large mononuclear cells, together with a few lymphocytes of the small variety. The spleen was similarly infiltrated, and in the perilobular connective tissues of the liver there were numerous foci of identical composition. The bone marrow was infiltrated by the same sort of large mononuclear cells, and the blood vessels contained them in numbers.

There has long been discussion as to why certain cases of mycosis fungoides undergo leukemic transformation, while others do not. An analogy, rather than an answer, is to be found in that form of disease described by Sternberg[3] under the heading of leukosarcomatosis, in which lymphosarcomas in different parts of the body suddenly commence to pour their cells into the blood stream in such numbers as to constitute

3. Sternberg: Beitr. z. path. Anat. u. z. allg. Path. **61**:75, 1916.

an acute lymphocytic leukemia. In his last paper on the subject, Sternberg recorded eight cases, six of which were of the lymphoid and two of the myeloid variety. In four cases of the lymphoid type, the original growth was located in the anterior and upper mediastinum, corresponding to the lymphoid remnants of the thymus. In three of these cases the clinical signs indicated that the thoracic growths had been present for four months, five months and three years, respectively. In a fourth case the clinical signs were said to have been of three weeks' duration, but the intrathoracic growth was of enormous size, and, according to Sternberg, must have been in existence for a period greatly in excess of that suggested by the clinical history. Of the two remaining cases of lymphoid leukosarcoma, one was a primary growth of the orbital region of three months', and the other a tumor of the neck of seven weeks', duration. In all of them the patients succumbed to acute lymphoid leukemia of remarkably short duration. In one case of this kind investigated at Bellevue Hospital, the original growth was a lymphosarcoma of the stomach; in four other cases the primary lymphosarcomatous growths were in the thymus. Of two cases mentioned by MacCallum,[4] one was primary in the breast, the other in the cervix of the uterus. In mycosis fungoides one group of cases, as just described, is attended by lymphosarcomatous changes in the lymph nodes and in the skin, sudden influx of their lymphoid cells into the blood stream terminating life with the picture of acute lymphoid leukemia. In other words, this particular pathologic subdivision of mycosis fungoides may retain its original lymphosarcomatous structure throughout, or it may undergo leukemic transformation, in which event it falls into alinement with the leukemic transformation of lymphosarcomas in many other parts of the body and thus takes its place in the category of Sternberg's leukosarcomatosis.

According to the pathologic conception outlined, mycosis fungoides is not a disease, but a conglomerate of cutaneous changes varying from incidental premycosic eruptions to tumors and tumor-like growths. In many cases the premycosic eruptions are absent. When present, according to one distinguished dermatologist (Sutton), the "earlier manifestations are as capricious in their course as they are variable in their aspect." On the other hand, the tumors and tumor-like growths in the skin are constant and constitute the outstanding feature in the clinical composite. In fact, it is from them that the condition derives its name. The premycosic eruptions present a heterogeneous array of histologic alterations, and, I think, may be disregarded. The tumors and tumor-like growths in the skin, as indicated, are attended by histologic changes of three distinct types: (1) that of Hodgkin's disease, (2) that

4. MacCallum: Textbook of Pathology, Philadelphia, W. B. Saunders Company, 1916, p. 774.

of a reticulum cell sarcoma, and (3) that of lymphosarcoma. To me it does not seem possible to reconcile three such divergent histologic types with one and the same disease. Moreover, in certain cases of so-called mycosis fungoides, the clinical behavior is fundamentally different from that in other cases, as witness leukemic transformation in that variety in which the lymph nodes and cutaneous tumors show the histologic lesions of lymphosarcoma, a tumor that is known to undergo leukemic conversion, sometimes maintaining its original small lymphocytes in the leukemic blood, at other times changing to lymphocytes of the large variety. In one of the reticulum cell sarcomas referred to, in addition to tumors in the skin and the lymph nodes, the right psoas magnus and the right rectus abdominalis muscles were extensively invaded, and the right ovary was converted into tissue of the same sort as that in the lymph nodes and the cutaneous tumors. In the disarticulated arm of another patient the muscle tissues were infiltrated throughout practically the whole length of the extremity, likewise by a reticulum cell sarcoma. Similar invasion and destruction of muscles are not infrequent in the infiltrating forms of Hodgkin's disease.

Facts such as these naturally lead to the question whether mycosis fungoides is inflammatory, as its name implies and as most textbooks would lead one to believe, or neoplasmic, or both. In Hodgkin's disease attended by infiltration and destruction of muscle tissue, one is apt to leap to the conclusion that the process is neoplasmic or that it represents neoplasmic conversion of a lesion that was originally inflammatory. However, the same destruction of muscle tissues occurs in tuberculosis, as shown, for example, by caseous disintegration of a vertebra with infiltration of the psoas muscles. If there is anything to be said in favor of one argument or the other, it is that Hodgkin's disease more closely resembles an inflammatory process in that it maintains its histologic individuality through all changes of environment, just as known infective lesions are, and as neoplasmic lesions not infrequently are not, wont to do. In one of the reticulum cell sarcomas referred to, the presence of metastatic deposits in the ovary would alone suffice for the diagnosis of a malignant tumor, and that lymphosarcomas are malignant tumors is scarcely to be gainsaid.

CONCLUSION

It seems to me that postmortem and histologic observations show that mycosis fungoides is the cutaneous expression of at least three different diseases of the lymph node system: Hodgkin's disease; a variety of round cell sarcoma arising from the connective tissue reticulum of lymph nodes or elsewhere, and lymphosarcoma, originating in the lymphoid cells of the lymph nodes or of other lymphoid structures—in short, that mycosis fungoides as an independent form of disease does not exist.

THE TRUE SUGAR CONTENT OF THE SKIN IN DIABETES*

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Several years ago Folin, Trimble and Newman [1] injected dextrose intravenously into animals and observed that shortly thereafter the quantity of reducing substances found in the skin was considerably increased. They took a series of specimens of this tissue from the same anesthetized animal previous to, and at regular intervals after, an injection of sugar, and noted that the content of reducing substances in the skin quickly rose to a level slightly less than that in the blood. It then declined in a manner such that it remained beneath, but more or less paralleled, that in the circulating fluid. At the time that investigation was made, the analytic methods available were sufficient to measure merely the total amount of reducing substances contained in the tissue examined, and it was not possible then to state with certainty just how much of this represented actual sugar. Recent improvements in the methods for differentiating dextrose from other reducing substances have enabled us to refine the experimental method used in the previous investigation so that it could be employed to measure the concentrations of true sugar in tissues with much greater certainty. With the aid of this procedure,[2] we have been able to collect data on human subjects which we present in the sections that follow.

In a report that came to our attention while we were preparing our data for publication, Urbach and Sicher [3] recently presented interesting observations on the sugar content (total reducing substances) of the skin under normal and pathologic conditions. These investigators described a microprocedure in which small cylinders of skin, weighing from 100 to 150 mg., were removed from an animal or a patient with the aid of an electric punch. The tissue was extracted and the total reducing substance measured by a modified Hagedorn-Jensen procedure. The data that they reported for single specimens from normal and from

* Submitted for publication, Feb. 23, 1931.

* From the Biochemical Laboratory, Harvard Medical School.

1. Folin, O.; Trimble, H. C., and Newman, L. H.: J. Biol. Chem. **75**:263, 1927.

2. Trimble, H. C., and Carey, B. W., Jr.: J. Biol. Chem. **90**:655 (March) 1931.

3. Urbach, E., and Sicher, G.: Arch. f. Dermat. u. Syph. **157**: 160, 1929.

diabetic persons are in general agreement with those that we shall record. In some instances, these workers were able to obtain a series of specimens from the same person during the four hours following an intake of dextrose. Their finding that under such circumstances the total reducing substance of the skin tended to rise and then to fall parallel with the sugar in the blood is in agreement with that of Folin, Trimble and Newman in their experiments on animals.

EXPERIMENTAL DATA

Plan of Experiments.—Specimens of skin from diabetic patients were obtained fresh from the operating rooms of the Palmer Memorial and the New England Deaconess Hospitals through the cooperation of Dr. E. P. Joslin, Dr. L. S. McKittrick and Dr. Shields Warren. Breasts removed by radical technic, limbs and feet amputated and skin cut away during abdominal operations provided liberal quantities of material from which portions of tissue well outside any infected area were excised. The sugar was then extracted from weighed portions of the material and its concentration determined. A sample of blood taken near the conclusion of the operation enabled us to obtain practically simultaneous values for the sugar contents of blood and skin under the conditions studied.

Methods.—Since the chemical methods employed will be described in detail elsewhere, it will be sufficient to outline them only briefly here. The fresh tissue was obtained by one of us present in the operating room at the time. It was carried to a laboratory just outside the operating room, where it was weighed and then thrown into boiling water to begin the extraction of the sugar. After this process had been completed, the volume of the extract was measured, and the protein was removed from an aliquot portion of the solution. In the protein-free extract, both the total reducing substances and the nonfermentable reducing material were measured by the Folin-Wu method. When the latter measurement was subtracted from the former, it became possible to calculate the concentration of true (fermentable) sugar in the aliquot portion, and ultimately that in the original specimen of tissue.

Results.—The results of our measurements are presented in the accompanying table. It may be noted that the average value found for the true sugar in the skin of our nondiabetic patients was 56 ± 8 mg. per hundred cubic centimeters. Our series is rather brief for fixing the absolute magnitude of this quantity, but probably it is sufficient to indicate that normally the true sugar content of the skin does not fluctuate between wide limits, and to fix approximately the location of the normal boundaries. Even these boundaries may be slightly too high because of the hyperglycemic effect of the ether anesthesia employed in these cases. When attention is directed to the cases that were classified as diabetic by our clinical associates, it may be observed that in every instance the true sugar of the skin was higher than the normal range, that it varied over very wide limits and that the average value (144 mg. per hundred cubic centimeters) was far above that for the nondiabetic cases.

It is of interest to compare the relationship of the true sugar of the skin with that existing in the blood at the corresponding time. In the diabetic patients, the average concentration of sugar in the skin was about 62 per cent of that found in the whole blood, and when the data for each patient are studied separately, it will be seen that the individual variations from this relationship were not great. Thus when our data are tabulated so that the concentrations of the total reducing substances

The True Sugar Content of Skin and of Blood

Subject	Blood		Skin: True Sugar	Dosage of Insulin	
	Total Reducing Substance, Mg. per 100 Cc. of Dextrose	True Sugar		Units	Hours Previously
Nondiabetic patients*					
Mrs. B.	152	...	69		
Mrs. P.	136	...	58		
Mrs. T.	124	...	46		
Miss C.	122	...	63		
Mrs. S.	120	...	58		
Mr. S.	119	...	54		
Mr. P.	108	98	48		
Averages	126		56		
Diabetic patients†					
Mrs. Y.	360	345	222	12	4
Mrs. W.	340	325	211	7	17
Mr. L.‡	339	...	210	5	4
Mrs. B.	298	...	211	0	
Mrs. I.	295	284	182	10	3
Mr. V.‡	266	253	177	10	4
Mrs. M.	260	...	155	10	4
Mr. C.	228	213	113	0	
Mrs. S.	196	184	98	5	17
Mr. L.§	186	170	105	10	2
Mr. V.§	170	152	87	10	4
Mrs. H.	154	...	91	8	4
Mr. R.	129	...	79	10	5
Mr. S.	120	111	83	10	17
Averages	238	226	144#		

* Anesthesia with gas and ether was given to all of the nondiabetic persons, the hyperglycemic effect of which probably accounts for the slightly elevated values for blood sugar in this group.

† Procaine hydrochloride was injected into the spine of all of the diabetic persons, except Mrs. I. and Mr. C., who were given nitrous oxide.

‡ First operation.

§ Second operation.

In computing this average, all of the diabetic persons are included. If it be restricted to those for whom there are also data on the true sugar of the blood, the average is changed to 142 mg. per hundred cubic centimeters.

The pathologist's report in each of the cases of diabetes was "gangrene with arteriosclerosis."

found in the blood gradually decrease in magnitude (as seen in the table), it may be observed that the values for the true sugar of the skin are likewise arranged in a descending order. That this relationship holds true for a given patient when observed at different times is shown by data recorded for Mr. L. and for Mr. V. In these two cases we were fortunate in being able to obtain two successive specimens at intervals several weeks apart. In each instance, clinical treatment between the operations had lowered the blood sugar level, and this was reflected by a corresponding decrease in the sugar content of the tissues as well.

Data on nondiabetic persons permit a direct comparison of the relation of the true sugar content of the skin with that of the blood in only one instance. There the sugar in the skin was 49 per cent of that in the blood. It is regrettable that observations bearing on this point were not secured at the appropriate time in the early stage of this investigation. Fortunately, the information necessary is obtainable in another manner. It has repeatedly been our experience,[4] as well as that of others, that with similar material, when the Folin-Wu copper method is used for measurement, the nonfermentable reducing substances of the whole blood average around 15 mg. per hundred cubic centimeters. On this basis, it was possible to evaluate the true sugar of the blood in those instances in which the more direct method of measurement was not carried out. This can be accomplished without serious error by subtracting 15 mg. per hundred cubic centimeters from the total reducing substance recorded for the whole blood. This procedure would yield an approximately average true sugar content of 110 mg. per hundred cubic centimeters for the whole blood in these nondiabetic persons. On the basis of this computation, the true sugar content of the skin averaged about 51 per cent of that in the whole blood, which is in close agreement with the relation observed in the one directly measured case.

To decide how exact a relationship exists between the concentration of true sugar in the skin and in the blood will require further experimentation. Our data, however, leave no room to doubt that an elevation of the sugar in the blood is accompanied by an increased quantity of true sugar in the skin; also that the two tend to parallel each other, with the sugar in the skin at the lower level. A decrease in the one is accompanied by a decline in the other. In general, the picture of the close relationship between the sugar in the blood and that in the skin that was revealed by the earlier experiments on animals is extended and confirmed by the present data from human sources.

In this connection, it is of importance to state that the quantity of nonfermentable reducing substance that we have found in the skin of nondiabetic persons is of small magnitude, averaging 12 mg. per hundred cubic centimeters. In the skin of diabetic persons it occurred in slightly greater amounts, averaging 19 mg. per hundred cubic centimeters. In these persons, the bulk of the reducing substance found proved to be true (fermentable) sugar.

SUMMARY AND CONCLUSIONS

Data on the true sugar content of the skin and the blood of diabetic and nondiabetic persons have been presented. In the nondiabetic group, the true sugar content of the skin averaged 56 ± 8 mg. per

hundred cubic centimeters, while in the diabetic group it averaged 144 mg. at a time when the average concentration in the blood was 226 mg. per hundred cubic centimeters. The elevation of the true sugar of the skin varied with the individual diabetic person, but it was always more or less proportional (averaging 62 ± 6 per cent) to the concentration existing in the blood at the same time.

The major portion of the total reducing substances in the skin of diabetic persons has been found to consist of true (fermentable) sugar.

It is evident, therefore, that in diabetes in human beings, with an increased concentration of sugar in the blood, definitely greater concentrations of true sugar exist in the skin.

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4. Trimble, H. C., and Maddock, S. J.: J. Biol. Chem. **78**:328, 1928 (table 1, exper. 3).

5. Folin, O.: J. Biol. Chem. **82**:91, 1929.

THE NITROGEN AND SULPHUR CONTENT OF SCALES IN PSORIASIS AND EXFOLIATIVE DERMATITIS *

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During the progress of research dealing with the etiology of psoriasis and exfoliative dermatitis it appeared advisable to investigate certain phases of the chemical composition of the scales of psoriasis and of exfoliative dermatitis with the hope of disclosing variations of such a character as to furnish some causative clue. From time to time various theories of the etiology of psoriasis have been proposed, but at present no theory has been sufficiently well supported to clarify the problem. Although the microbic theory of psoriasis probably has the greater number of adherents, recent work on the rôle of sulphur in metabolism suggests that if the etiology of psoriasis is not metabolic, some metabolic change in the skin may be a factor.

The results presented in this paper are the analyses of scales from patients with psoriasis and exfoliative dermatitis. In only a few instances was it possible to secure samples from patients over a long period of time to determine more certainly whether there was any appreciable variation in the composition of the scales of any one person.

EXPERIMENTAL DATA

The scales were secured from patients who had not applied external medicament. These were dried to constant weight at from 90 to 100 C.

For the determination of the total amount of nitrogen by the usual Kjeldahl method,[1] from 0.2 to 0.4 Gm. of the dried scales were weighed from a moisture bottle directly into dry Kjeldahl flasks. For the determination of the total amount of sulphur, the method of Zahnd and Clarke [2] was followed in all details. It was found most convenient to use a sample of from 0.3 to 0.4 Gm. of scales. This sample was placed in a 75 cc. pyrex test tube, and to it were added 0.5 Gm. of potassium nitrate and 5 cc. of concentrated nitric acid. After the complete destruction of the organic matter and the oxidation of the sulphur to sulphate, the excess nitrate was driven off with concentrated hydrochloric acid. The precipitation of the sulphur as sulphate was carried out in the same tube in 0.2 per cent

* Submitted for publication, April 4, 1931.

* From the Chemical Research Laboratories, Skin and Cancer Hospital of Philadelphia, Albert Strickler, M.D., Medical Director.

1. Methods of Analysis of the Association of Official Agricultural Chemists, Washington, D. C., 1925, p. 8.

2. Zahnd, H., and Clarke, H. T.: The Estimation of Sulphur in Organic Compounds, J. Am. Chem. Soc. **52**:3275, 1930.

hydrochloric acid by the addition of a slight excess of barium chloride. The barium sulphate so precipitated was filtered through a weighed Gooch crucible and weighed; then the amount of sulphur was calculated.

The tabulated results represent the percentages of sulphur and nitrogen in the dry scales. Every result is the average of two determinations, except those in a few cases which are the average of three.

COMMENT

The analyses here reported are of interest in the light of the work of various investigators during the last ten years, on the rôle of sulphur compounds, especially glutathione, in the human skin. Kaye [3] showed that parts of the epidermis, hair follicles and the lining of the sebaceous and sweat glands give the nitroprusside reaction, which is due, presumably, to glutathione. Giroud and Bulliard [4] showed that the nitroprusside reaction is most intense in those areas immediately preceding

TABLE 1.—*Percentage of Sulphur and Nitrogen in Dry Scales*

Patient	Total Nitrogen, per Cent	Total Sulphur, per Cent	Ratio of Nitrogen to Sulphur
Psoriasis			
Mr. S.	14.21	0.898	1:15.8
Mr. M.	14.40	0.827	1:17.4
Miss F.	14.79	0.897	1:16.4
Mr. R.	12.71	0.745	1:17.0
Mr. K.	13.86	0.905	1:15.3
	13.82	0.952	1:14.5
	14.10	0.951	1:14.8
Exfoliative Dermatitis			
Mr. T.	15.38	0.786	1:19.5
Mrs. M.	12.94	0.905	1:14.3
	12.17	0.766	1:15.9

keratinization. Percival and Stewart [5] stated that the concentration of the sulphydryl group does not appear to be related to the prevailing metabolic activity of the epidermal cells, and that the sulphydryl group does not appear to exert a catalytic effect in the formation of keratin. Proteins containing sulphydryl may, however, be the precursor of keratin.

Loeper [6] found that there is an increase of from 23 to 30 per cent in the sulphur content of the skin of dogs after the extirpation of the

3. Kaye, Madge: Observations on the Behavior of a Substance Giving the Nitroprusside Reaction in the Skin and Hair, Biochem. J. **18**:1289, 1924.

4. Giroud, A., and Bulliard, H.: Glutathione and Keratin, Compt. rend. Soc. de biol. **98**:500, 1928; The Skin and Glutathione, Ann. de dermat. et syph. **10**:73, 1929.

5. Percival, G. H., and Stewart, C. P.: Sulphydryl-Containing Constituent of the Epidermis and Its Relation to Melanogenesis and Keratinization, Brit. J. Dermat. **42**:215, 1930.

6. Loeper, M.; Decourt, J., and Lesure, A.: L'accumulation in souffre dans la peau apres surrenalectomie, Compt. rend. Soc. de biol. **98**:1098, 1928.

adrenal glands. Hämmerli [7] reported an increased excretion of sulphur in psoriasis, but his results could not be confirmed by Geber,[8] who concluded that in psoriasis the protein metabolism is not disturbed. Macleod [9] called attention to the fact that in the early days of starvation the ratio of the excreted nitrogen to sulphur is 17:1, but it later becomes 14.5:1, which is practically the same as the ratio of nitrogen to sulphur in muscle. It will be seen that this is within the limits of our findings for the ratio of nitrogen to sulphur in psoriatic scales and of those for normal epidermis reported by other investigators.

The results of various investigators indicate that in certain constituents of the human epidermis there is a wide variation. Brown [10] showed that in the human skin there is a variation of 25 mg. per hundred grams in calcium, 18 mg. in magnesium, 110 mg. in sodium and 171 mg. in potassium. These figures agree fairly well with the findings of Nathan and Stern [11] that there is a variation of from 20 to 30 mg. per hundred grams in calcium and from 200 to 300 mg. per hundred grams in the potassium content of fresh normal human skin. Börnstein, [12] however, stated that there is not an appreciable variation in the calcium and potassium content of the skin of mice on either an acid or a basic diet.

The nitrogen and sulphur content of the human skin as given by several investigators is summarized in table 2:

TABLE 2.—*The Nitrogen and Sulphur Content of the Human Skin*

	Wilson and Lewis*	Y. Jono†	Mulder‡	Scherer‖
Total nitrogen, per cent	11.30	....	17.23	17.21
Total sulphur, per cent	0.70	0.78	.....	0.74
Ratio of nitrogen to sulphur	1:16.1	....	.....	1:23.2

* Wilson, R. H., and Lewis, H. B.: The Cystine Content of the Hair and Other Epidermal Tissues, J. Biol. Chem. **73**: 543, 1927.

† Jono, Y.: Ueber die chemische Zusammensetzung der menschlichen epidermis, J. Biochem. **10**: 311, 1929.

‡ Mulder, quoted by Kahn, Max, and Goodridge, F. G.: Sulphur Metabolism, Philadelphia, Lea & Febiger, 1925.

‖ Scherer, quoted by Kahn and Goodridge (footnote ‡).

7. Hämmerli, T.: Untersuchungen über den mineralischen Stoffwechsel bei Psoriasis, Monatsh. f. prakt. Dermat. **53**:177, 1911.

8. Geber, J.: Nitrogen- und Schwefelstoffwechselungen bei Psoriasis vulgaris, Dermat. Ztschr. **20**:377, 1913.

9. Macleod, J. J. R., and others: Metabolism, in Physiology and Biochemistry in Modern Medicine, ed. 6, St. Louis, C. V. Mosby Company, 1930, p. 805.

10. Brown, H.: The Mineral Content of Human, Dog, and Rabbit Skin, J. Biol. Chem. **68**:729, 1926; **75**:789, 1927.

11. Nathan, E., and Stern, F.: The Mineral Content of the Skin Under Normal and Pathological Conditions, Dermat. Ztschr. **54**:14, 1928.

12. Börnstein, K.: Studies of the Mineral Metabolism of the Skin: Calcium and Potassium Determinations in the Skin of Mice on an Acid or Basic Diet, Biochem. Ztschr. **172**:133, 1926.

The percentage composition of keratins, the principal protein of the skin, is also variable. As given by Hawk and Bergeim,[13] the keratin from the hair of several races is practically constant at a ratio of nitrogen to sulphur of 1 : 3, while the ratio in the keratin from human nails is 1 : 6.

Unna [14] stated that human epidermis and the hide of animals differ in the ratio of keratin *A* and *B* and albumoses. When the wide variety in the types of scales from cases of psoriasis and exfoliative dermatitis is considered a difference in the nitrogen and sulphur content might be expected unless the superficial difference is due to constituents other than the keratins. The present preliminary investigations do not show any appreciable variation in the content of the two principal constituent elements, nitrogen and sulphur.

SUMMARY

1. The nitrogen, sulphur and mineral content of normal human epidermis as reported by several investigators is evidently variable.

2. The ratio of sulphur to nitrogen in the scales from patients with psoriasis and exfoliative dermatitis varies from 1 : 14.3 to 1 : 19.5.

3. In one person, scales taken at three different times showed a variation in this ratio of from 1 : 14.5 to 1 :15.3. In another person, scales taken at two different times showed a variation of from 1 : 14.3 to 1 : 15.9.

4. It appears that as far as the content of nitrogen and sulphur is concerned there is no striking difference between psoriatic scales and normal epidermis.

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13. Hawk and Bergeim: Practical Physiological Chemistry, Philadelphia, P. Blakiston's Son & Company, 1928.

14. Unna, P. G.: The Composition of Horn and Epidermis, Med. Klin. **16:** 1276, 1920.

SUNBURN TANNING

COMMENT ON THE ACTION OF LIGHT ON THE SKIN *

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The basal cells of the epidermis and the contiguous portions of the true skin, or corium, contain pigment. In the skin of the dark races, the pigment lies in other layers as well. Recent methods of staining have shown that the pigment, or melanin, is not the only type present in and about the basal cells. Prepigment granules may be revealed by special staining methods. The chromatophores may likewise be demonstrated.

The white person's skin is not white normally. Its color depends on the presence of pigment, the contents of the blood vessels close to the surface and the thickness of the granular layer of the epidermis. The granules of the cells of the granular layer are highly refractile to light. Where the granular layer is absent, as in the lips and the nail-bed, the color is pink and not white. Where the granular layer is thick, as in a corn or callus, the skin appears very white.

Ordinarily, one notes that the skin has a protective function, and that the pigment shares in this function. It is difficult to evaluate the exact part that the various pigments in the skin play in the rôle of protector. The normal pigment varies in amount and character according to many factors. The colored person with skin rich in pigment is said to be best fitted for life in tropical lands. In white persons, the ease varies with which pigment either forms in situ or is carried to parts exposed to specific wavelengths of radiation or other trauma. The reaction to the invisible ultraviolet radiation capable of producing pigmentary changes in the skin is not present in all people. In albinos, persons who are entirely free from pigment, pigment is not marshaled on exposure to ultraviolet radiation capable of exciting such reaction. Normally, portions of skin of persons from which the pigment has been lost, as in the disease vitiligo or leukoderma, do not sunburn or suntan on exposure to specific erythema-producing and tanning ultraviolet radiation.

PIGMENT PRODUCTION THROUGH EXPOSURE TO THE SUN

A number of factors are needed to ensure pigmentation of the skin following exposure to radiation from the sun or its artificial substitutes. I shall briefly enumerate these factors. The first is the capability of the

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skin to react to radiation by the marshaling of pigment. The second factor is the specific erythema-producing radiation either in sunlight or its artificial substitutes. Numerous experiments with dispersing quartz prisms or with filters have demonstrated the concept that ultraviolet rays of specific wavelengths or frequencies effect tanning on the previously nonexposed white person's skin. Another factor is that of time. It is readily recognized that if the period of exposure of the skin to the erythema-producing rays is short, neither sunburn nor suntan will follow. The distance from the source of sunburning radiation is another factor that must be considered. We sunburn on shorter exposures close to the artificial source of radiation, and from the sun, on mountain tops more quickly than in the valleys, other things being equal.

In my experiments with erythema-producing radiations, I have become convinced of the need for still another factor: threshold value. This idea of threshold value is that the biologic reaction to specific ultraviolet radiation depends on more than the factors of time and intensity of the radiation. If the intensity is so low as to fall below a subnormal threshold value, it makes no difference how long the time of the exposure, no biologic reaction will be obtained.

The erythema rays of the sun vary continually in intensity as they reach the earth, owing to the shifting position and changing atmospheric conditions. The sunlight at high altitudes is different from that in cities, where bright sunny days are few and far between. At sea level and at the seashore the erythema value of the sunlight is enhanced by the mirror action of the sea's surface. In the winter season at the latitude of New York City little erythema-producing radiation reaches the skin, so that one in the vicinity of New York City does not sunburn in winter. Nor do we sunburn under glass or other protection, because the erythema-producing or suntanning radiation is of such wavelength as not to be able to pass through glass.

We are accustomed to speak of the sun and sun substitutes as if they were very close in their make-up or composition of sunburning radiation. This is far from the truth, and experiments performed with the generators of artificial sunlight should not be accepted as equivalent to exposure to the natural noonday sun in summer. I shall not mention the technical differences as determined by physical studies, but I shall recall that the suntan following exposure to the sun is a much darker brown and more lasting than that following exposure to the mercury vapor arc in quartz emanators of erythema-producing radiation. The radiation from the sun is unique in that it has the smallest component of infrared and of ultraviolet rays as compared to the intensity of its visible light radiation. Every artificial source of radiation has intense heat or infra-red, for example.

The importance of these paragraphs must not be underestimated. Much of the experimental work in the attempts to elicit pigmentation of the skin, as for example on the sites of the application of oil of bergamot, of perfume or of toilet water, has been done with the artificial substitute for sunlight. The patients, on the other hand, have been exposed to the natural sun.

The specific erythema and tan producing rays from the sun and its artificial substitutes are not the exclusive agency for the production of pigment on the skin. Chronic irritation as evidenced in the pigmentation of the skin after long-standing itching diseases (vagabonds' disease), is a clinical entity. Certain diseases of the internal mechanism result in hyperpigmentation, as in Addison's disease. The roentgen rays and radium applied to the skin result in hyperpigmentation. These examples must suffice.

SENSITIZATION OF THE SKIN

One must become acquainted with a concept of the biologic reaction of the skin to sources of radiation, which normally would not result in pigmentation but which does so through the agency of a so-called "sensitizer." I shall briefly review the factors in the production of pigment in the light of this concept. The addition of a sensitizer has been reported to make possible the pigmentation of the skin which ordinarily does not react by the production of pigment. In a person with vitiligo, for example, pigmentation is supposed to result when a patch painted with a sensitizer is exposed to the sun. Another patch not painted with sensitizer on exposure to the same radiation will not show pigmentation. The claim has likewise been made that pigmentation of the skin will follow exposure of sensitized skin to a source of radiation, despite the fact that the erythema and suntanning rays have been filtered out by the interposition of plate glass. The use of a sensitizer has also been claimed to cause pigmentation of the skin on shorter exposure than normal skin requires. And I should like to add that the proponents of the action of sensitizers would undoubtedly claim that the skin would react to sources of radiation with a subthreshold erythema value.

The action of sensitizers is supposed to depend on several factors. There is supposed to be a more complete absorption of the erythema-producing radiation by the skin treated with sensitizer than by untreated skin. The entire subject of absorption of radiation is in a state of flux and cannot be discussed at this time. The second action of the sensitizer is supposed to be through transformation of absorbed radiation of non-pigment-producing wavelengths into wavelengths producing pigment.

By and large, the sensitizers offered by the proponents of this idea have been fluorescent substances, particularly fluorescent dyes. In the preparation of photographic plates, such sensitizers have been found of

great value. The facts elicited through such studies are usually transferred to those on the human skin as if a photographic plate and the human skin had the same reactions.

Sensitization in the Production of Cosmetic Tan.—The recent craze or fad for appearing suntanned (incidentally, this is on the decrease) brought forward many products for which the claim was advanced that their use would enhance the tanning of the skin without the preliminary painful sunburn or erythema. A number of oils, creams, lotions and alcohols have been submitted to the public with this in view. The popularity of some of them must attest to their utility. It appeals to me at this moment that all the commercial ones must have been perfumed.

A number of other preparations have been advocated for intensification in the formation of pigment or for other results of exposure to erythema-producing ultraviolet rays. I will only mention the application, in therapeutics, of coal tar ointment followed by the irradiation of the skin with the emanation from the mercury vapor arc in quartz lamps for the alleviation of psoriasis.

THE RELATION OF THE DISEASES OF THE SKIN TO LIGHT

Photogenic Diseases of the Skin.—Some phase of sunlight has a part in the etiology of a number of diseases or abnormalities of the skin. The simplest of these is freckling. Freckles appear on the skin after exposure to vital sunlight. Not all persons exposed to the same sun under exactly the same circumstances freckle. The same statement may be made for a long series of photogenic disorders. Some underlying defect in the skin, let us say, is set into motion by exposure to some quality in sunlight that acts as a catalyzer. The list of photogenic diseases of the skin is impressive and includes such diseases as pellagra, lupus erythematosis, lupus erythematosis disseminatus, hydroa aestivale, xeroderma pigmentosa and other diseases. Each is serious and, indeed, can be fatal. Each, as far as can now be determined, has some background in exposure to light. Millions and millions of people are exposed to sunlight, yet each of the diseases mentioned is rare.

Many nondescript conditions of surfaces exposed to the sun—the back of the neck, the cheeks, the backs of the hands—have been placed in the photogenic group, but these require further study.

Solar Allergy and the Skin.—We have in recent years been introduced to the concept of physical allergy. Persons exposed to sunlight, for instance, through a window, have evidenced urticaria or urticaria-like reactions on the exposed skin. Duke photographed a patient whose naked back had been exposed to the sun with a sashed window interposed. The reaction of the skin was present only where the sunlight

had reached the skin through the glass, and no reaction was evident over the shaded portions, owing to the presence of the wooden framework.

Hematoporphyrin Sensibility to Sunlight.—The indefinite nature of the sensibility of the skin to sunlight has one exception, or one apparent exception. By the injection of hematoporphyrin into the blood stream, it is possible to produce experimentally a hypersensitivity of the skin to sunlight with such marked consistency as to be more than chance. Further, the hypersensitivity to sunlight persists after no trace of the drug can be demonstrated in the blood, bile or urine.

Clinically, the presence of hematoporphyrin has been established in patients who evidence disorders of the skin that are regarded as photogenic. Hydroa aestivale is notable in this connection, although a division has been made of this affliction on the basis of the presence or absence of hematoporphyrin.

Dermatitis Medicamentosa and Sunlight.—After the ingestion and absorption of a number of drugs used as medicament, particularly of the halogen group, such as the iodides and bromides, an eruption classified as dermatitis medicamentosa (to differentiate it from dermatitis venanata, which implies a lack of absorption) may appear in some persons. A classic eruption fitting into this group was traced to the use of phenobarbital and reported by Haxthausen. It was limited to the areas of skin exposed to sunlight, namely the face and the dorsal surfaces of the hands. The patient had not been sensitive to light previously, and the lesions regressed immediately after the phenobarbital was withdrawn. Porphyrin was detected in the urine.

Influence of Sunlight on Exanthems.—It is common household knowledge that sunlight has an influence on the eruption of measles, as is illustrated by the drawn shades of the sick chamber. Sunlight also influences the scarring of variola or smallpox, a fact that led to the exclusion of sunlight by red curtains in such cases. The son of Edward I of England was treated for smallpox by being covered with scarlet blankets and red counterpanes. In the time of Queen Elizabeth the value of red curtains and red glass about the bed in smallpox cases was lauded by certain doctors. There were red bed covers and red globes in the beds of patients with smallpox throughout the Middle Ages. Early in the eighteenth century, in France, children were clothed in scarlet cloth or kept in beds with scarlet curtains, and the same custom prevailed in Japan. Since time immemorial it has been the custom in Roumania to cover the patient who had smallpox with red cloth, and in Tonkin the patient is placed in an alcove from which all light is excluded by numerous red hangings.

Finsen, the father of modern phototherapy, recalled that the face and hands, the parts exposed to light, were the sites of deepest scars in

cases of smallpox. He clearly recognized that it was the invisible component of sunlight, the so-called chemical rays, that was at fault. Svendsen definitely proved that light could change a vesicle of variola into a pustule. He allowed patients with smallpox to be exposed to daylight after the vesicles of the face were fully dried but those on the backs of the hands were still moist. When the patients were exposed to light, the moist lesions suppurated and left scars, while there were no scars elsewhere. It was by such experimental work that Finsen discovered the irritating quality in sunlight under certain conditions and under certain circumstances. The knowledge was applicable in a negative way: light therapy could be practiced by excluding light.

Skin Cancer and Light.—A number of diseases of the skin are held to be due to exposure to the sun, such as sailor's skin and farmer's skin. Such exposure to the sun or to the sun and weather results in changes in skin metabolism which are regarded as early skin cancer when slightly scaly and thickened, and as true skin cancer when tumefied or ulcerated.

Industrial Skin Disease and Light.—Workers in certain industries dealing with coal tar have been reported as suffering from reddened skin which was highly pruritic. The sites of the itching were the face, the neck, the hands and the forearms, sites ordinarily exposed to light. It was further reported that some of the workers did not suffer at night or when in shadow.

SUMMARY

I have reviewed the factors of pigmentation of the normal skin and discussed the features of induction of pigmentation of the white man's skin by radiation from solar and artificial sources. The subject of sensitizing the skin to make it more amenable to the production of pigment through erythema-producing radiation is touched on, particularly as it affects cosmetic tanning, photogenic diseases and eruptions of the skin partially responding to solar radiation.

This entire subject of the biology of pigment in relation to vital ultraviolet radiation is important in view of the wide use of emanators of this type of radiation and the equally wide use of medicines of the coal tar derivative group, since it appears that coal tar quotients by ingestion in some persons induce a sensitivity to ultraviolet radiation.

Local responses to the topical application of coal tar products and to erythema-producing ultraviolet rays produce conflicting results as far as pigmentation is concerned. Such a combination is offered in the treatment for vitiligo and leukoderma, and a like combination is also offered as the solution of the etiology of perfume dermatitis.

The biologic reaction of the skin to sources of light must also be considered in cancer of exposed surfaces of the skin and in some industrial dermatoses.

CHEMICAL AND ELECTROLYTIC LESIONS OF THE MOUTH CAUSED BY ARTIFICIAL DENTURES *

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Erosions and chronic ulceration resulting from irregular teeth or improperly fitting artificial dentures are recognized and frequently discussed by the members of both the medical and the dental profession as predisposing factors in malignant conditions.

Recently, Shelmire [1] and others emphasized the importance of a careful examination of the mucosa of the mouth in all suspected cases of toxic drug eruptions.

In a previous address, I [2] called attention to the possibility of abrasions and sometimes of painful ulcers forming as a result of careless and improper use of the stiff bristle tooth brush which dentists have urged on the public during recent years.

The object of this paper, however, is to discuss two additional sources of trouble that have received little or no attention by American physicians, though reports of occasional cases are found in dental literature, and to show that efforts have been made to overcome and avoid one of the sources of trouble.

I shall speak, first, of lesions produced by poisonous chemical constituents of artificial dentures, and, second, of injuries arising from electrochemical action between dentures such as plates, bridges, crowns or fillings made of different metallic elements.

DENTAL PLATES MADE OF VULCANITE

During routine examinations of the mouth in dermatologic cases at the outpatient department of the Oklahoma University Medical School

* Submitted for publication, June 29, 1931.

* Read before the Section on Dermatology and Syphilology at the Eighty-Second Annual Session of the American Medical Association, Philadelphia, June 12, 1931.

1. Shelmire, Bedford: Certain Diseases of the Oral Mucous Membrane and Vermilion Borders of the Lips, South. M. J. **21**:169 (March) 1928.

2. Lain, E. S.: Lesions of the Mouth, address before the Oklahoma State Dental Assn., 1925.

and the Lain-Roland Clinic, for many years lesions in the mouth have been observed that could not, by either macroscopic or microscopic examination, be charged to constitutional derangement, specific infection or other irritations that ordinarily are not difficult to recognize.

It was first noted that cases of sore mouth occurred frequently in adults who had recently been fitted with new dental plates made of vulcanite. It was further observed that most of these cases occurred when the plates were colored red or were made of so-called gold-dust vulcanite, prepared and fitted, in many instances, by cut-rate dentists.

Subsequently, one of my dental friends wrote a letter of inquiry to several reputable manufacturers of the vulcanite that was used in these particular plates. Several courteous replies were received, one as follows:

"Vulcanite is made of para-rubber or caoutchouc to which has been added sulphur for hardening and a sufficient amount of vermilion (mercury sulphide) for coloring. In the case which you have described, the trouble was probably due to an excess of sulphur or mercury in the plates which had been imperfectly vulcanized—under-cured."

A reply by another suggested that "all Vulcanite plates are heavily charged with sulphur and are more or less colored with pigment such as vermilion and carmine." They further commented that "neither mercury nor sulphur, when the plates are properly cured, is considered detrimental to the oral tissues."

"Unfortunately, however, Vulcanite plates do not transmit heat or cold rapidly, and as a result, after a time they cause more or less devitalization of the structures underlying.

"In the process of vulcanization, whether it is done on plaster molds or between metals, there always remains a certain amount of porosity which may become a harbor for fermenting particles of food and bacteria."

A qualitative analysis made of vulcanite plates used by two of my patients who had suffered from a severe stomatitis a few months after being fitted with them disclosed that one plate, of a deep red, was porous and contained free mercury sulphide. The other, made of the so-called gold-dust rubber, contained free aluminum and sulphur with a slight trace of copper.

The manufacturers of dental material have done a vast amount of research, endeavoring to overcome the objectionable features of vulcanite as a base material; hence, within recent years, many new materials have appeared on the market, each one making extravagant claims to have eliminated all the evils of which vulcanite has been accused.

NEWER BASE MATERIALS

According to Furnas,[3] newer base materials may be classified as follows:

1. Celluloid, made of pyroxylin, a woody fiber of plants, which has been treated with nitric and sulphuric acids forming nitrocellulose, commonly known as guncotton.

2. Condensite, a phenol-resin compound, made by the addition of formaldehyde and ammonia to phenol crystals, to which is added mercury sulphide or carmine as the coloring material.

TABLE 1.—*Approximate Composition of Dental Base Material* *

Vulcanite †			Newer Base Materials ‡	
Dark Brown	Parts	Per Cent	Celluloid (Pyroxylin)	
Caoutchouc	48	66.66	Woody fiber of plants treated with nitric and sulphuric acids becoming nitrocellulose (guncotton)	
Sulphur	24	33.33		Approximate Parts
Red			Nitrocellulose	100.00
Caoutchouc	48	44.44	Camphor	40.00
Sulphur	24	22.22	Zinc oxide	2.00
Vermilion (mercury sulphide)	36	33.33	Vermilion	0.06
Dark Pink			Condensite (Phenol-Resin Compound)	
Caoutchouc	48	42.85	Composed of: phenol crystals; formaldehyde, ammonia, carmine and other constituents as fillers	
Sulphur	24	21.42		
Zinc oxide	30	26.78	Bakelite, helcolite, alcolite, etc.	
Vermilion	10	8.92		
Black				
Caoutchouc	48	50.00		
Sulphur	24	25.00		
Ivory black (or deep black)	24	25.00		
Metals				
Aluminum, gold, platinum, palladium, stainless steel, etc.				

* These formulas are copyrighted and secret.
† American Textbook of Prosthetic Dentistry, Philadelphia, Lea & Febiger, 1928.
‡ Furnas (footnote 3).

3. Metal of various alloys, such as aluminum, gold, platinum, palladium and, in recent years, stainless steel, which appears to be more popular in European countries than in America.

Although the formulas of base materials are copyrighted, textbooks on prosthetic dentistry give the analyses of various kinds of vulcanites grouped in table 1.

Experienced dentists are not yet ready to accept fully the newer base materials, since they have only a doubtful advantage in thermic conduction, produce an almost constant chemical taste and are more expensive.

3. Furnas, I. L.: The Choice of Base Material for Artificial Dentures, J. Am Dent. A. **18**:3 (Jan.) 1931.

Lindsay,[4] in a recent article, reported an interesting case of glossitis affecting the dorsum and margins of the tongue, caused by new dental plates. He proved his suspicions by binding the offending plate to the skin of the patient, which gave a positive reaction. On careful examination of the plate, it was found to be made of condensite which had not been sufficiently cured. He further called attention to the possibility of injuries to the lips of smokers who use holders or pipe stems made of bakelite, which is a nitrocellulose compound.

It is fundamental knowledge that imperfect adaptation of dental plates to the alveolar processes and malocclusion cause traumatic injuries and subsequent danger of cancer. It is, however, not well known that

TABLE 2.—*Summary of Forty-Five Consecutive Cases of Full Plate Dentures, Naming Base Material*

	No. Cases	Sore Mouth	Bad Taste	Blanching	Trauma	Infection	Comment
Celluloid.....	4	1	2	3	0	0	Evidence of imperfect curing in case of sore mouth
Condensite.....	6	2	4	1	1	0	Each case of sore mouth probably due to undercured plate
Metallic.....	4	2	2	0	1	1	In one case there probably was an electric discharge to amalgam-filled teeth below
Black ebony...	3	0	0	0	0	0	
Dark brown....	4	2	1	0	1	1	Free sulphur found in one plate
Pink.....	8	2	0	3	2	2	One plate probably overcolored with carmine
Deep red.....	8	4	0	0	3	1	Free mercury sulphide found by analysis in one plate
Gold-dust.....	8	6	0	2	2	3	Aluminum dust found by analysis in one plate
Per cent		42	20	20	22	17	

the chemical constituents of dental plates that have been either overcolored or undercured may cause marked chemical irritation of the oral tissues.

Although dentists insist on routine removal and thorough cleansing of dental plates, one may still frequently observe, even in private practice, cases of a marked degree of vegetating stomatitis beneath artificial dentures.

METALLIC AND ELECTROCHEMICAL INJURIES

I [5] previously called attention to a nickel dermatitis occurring on parts of the body in contact with spectacle frames or jewelry made of white gold.

4. Lindsay, H. C. L.: Traumatic Glossitis Due to Irritants Contained in Newer Plastic Denture Materials, Urol. & Cutan. Rev. **34**:169 (March) 1930.

5. Lain, E. S.: Nickel Dermatitis: A New Source, J. A. M. A. **96**:771 (March 7) 1931.

In the clinic and hospital referred to, only a few similar cases have been observed in the mouth, though nickel is rarely used as an alloy except in hard gold dentures.

Early in these studies of a series of oral cases, lesions of the mucosa were noted in proximity with metallic dentures of unlike electrical potentiality.

After eliminating all other possible etiologic factors, I suggested the possibility of electrical discharges between the dissimilar metals, which, in the presence of saliva as an electrolyte, would constitute a galvanic battery.

The services of an electrical engineer and a sensitive micro-ammeter were furnished by the Southwestern Bell Telephone Company. Tests and control studies outside the mouth were first made by suspending

TABLE 3.—*Preliminary Tests*

Solution used.....	Slightly acid (p_H 6.2)	
Metals used.....	1. Aluminum plate 2. Amalgam filling 3. Gold filling, extracted tooth 4. Amalgam filling, extracted tooth	
Test 1—Aluminum plate and amalgam filling; current flow.....		2,800.00 micro-amperes
Test 2—Aluminum plate and extracted tooth containing amalgam filling; current flow		800.00 micro-amperes
Test 3—Aluminum plate and extracted tooth containing gold filling; current flow		500.00 micro-amperes
Test 4—Two extracted teeth, each containing medium-sized filling, one gold and the other amalgam; current flow.....		110.00 micro-amperes
Test 5—Two extracted teeth containing gold fillings; current flow.....		0.00 micro-amperes
Test 6—Two extracted teeth containing amalgam fillings; current flow..		2.00 micro-amperes

Internal resistance of meter for the tests, 20 ohms

in buffered solution various kinds of metallic dentures, including extracted teeth that contained metal fillings.

Surprising electric response was met with in each test made, except when metals of like potentiality were tested.

From the attendants on the house staff of the State University Hospital and certain private patients of the Lain-Roland Clinic, those whose mouths contained dissimilar metallic dentures were next selected. From such a group better oral hygiene and less complicating infections or traumatic lesions were anticipated.

Meter readings varying from 1 to 40 micro-amperes were registered in 100 per cent of the cases tested.

For controls, a series of adults from the same hospital and clinic whose mouths contained only one kind of metal was selected. Gold to gold tests registered no response in the ammeter.

Three cases registered a slight vibration of the ammeter needle when testing amalgam to amalgam. These amalgams were of different color and apparently of different metallic composition.

TABLE 4.—*Galvano-Electric Tests, in Thirty Cases of Mouths Containing Two or More Metals*

	Micro-Amperes		Saliva			Symptoms			
Case	Initial Flow	Steady Flow	Neutral	Alkaline	Acid	Metallic Taste	Mucous Patches	Tongue	Comment
1	22.0	11.0	0	0	++	+	+	+	Almost constant discomfort and bad taste
2	40.0	20.0	0	++	0	+	0	0	Burning tongue, intermittent
3	5.0	3.0	+	0	0	0	0	0	
4	4.0	1.0	+	0	0	0	0	0	
5	3.0	2.0	0	0	+	+	0	0	
6	7.0	3.0	0	0	+	+	0	0	
7	23.0	10.0	0	0	+	+	0	+	Margins of tongue adjacent to amalgam fillings red
8	38.0	20.0	0	++	0	+	+	+	Dark colored amalgam fillings; mucous patches adjacent to amalgam filling
9	7.0	4.0	0	+	0	0	0	0	Amalgam fillings appeared to have large silver content
10	12.0	6.0	0	+	0	+	0	0	
11	20.0	8.0	0	0	+	+	0	0	
12	6.0	3.0	0	++	0	+	0	0	
13	4.0	3.0	0	+	0	0	0	0	
14	6.0	2.0	0	++	0	+	0	0	
15	20.0	9.0	0	++	0	+	+	+	Gold filling; crowns; dark amalgam filling, probably not silver
16	8.0	3.0	0	0	+	+	+	0	Taste intermittent with acid stomach
17	4.0	3.0	0	+	0	0	0	0	
18	2.0	1.0	0	0	+	0	0	0	
19	1.0	2.0	+	0	0	0	0	0	
20	14.0	6.0	0	0	+	+	0	+	Large gold filling; small silver amalgam filling
21	6.0	3.0	0	+	0	+	0	0	
22	6.0	2.0	+	0	0	0	0	0	Upper plate, gold tooth; amalgam filling in lower tooth; electric sensation; burning tongue
23	20.0	12.0	0	0	++	+	+	+	
24	5.0	3.0	0	+	0	+	0	0	
25	5.0	4.0	0	0	+	0	0	0	Silver fillings
26	10.0	3.0	0	0	+	+	0	+	Burning tongue; electric sensation relieved by extraction
27	40.0	20.0	0	++	0	+	0	0	Gold bridge; dark amalgam filling; gave variable tests
28	8.0	3.0	0	+	0	0	0	0	Silver amalgam fillings
29	26.0	18.0	0	0	++	+	+	+	Electric nerve sensations when metals touched
30	28.0	18.0	0	0	++	+	+	+	Mucous patches on buccal surface and tongue; toxic symptoms
Total cases		30	4	13	13	20	7	9	
Average micro-amperage	13.3	6.8							
Per cent		100	13	43	43	66	23	30	

A simple proof of electrochemical action may be made by placing a polished silver dime and a polished copper penny in the mouth, one above and the other below the tongue, letting their edges gently touch over the end of the tongue. A metallic taste is quite perceptible after a few minutes.

REVIEW OF THE LITERATURE

Judging from a review of medical literature, physicians and dentists of America have apparently given little consideration to metallic tastes, burning tongue or dental nerve sensations, which are common complaints in any large clinic.

Hodgen [6] mentioned and briefly discussed the subject of electric potentialities of different metals that are used in amalgam.

Electromotive Force Series of Metals

1. Aluminum
2. Manganese
3. Zinc
4. Iron
5. Cadmium
6. Cobalt
7. Nickel
8. Tin
9. Lead
10. Hydrogen
11. Arsenic
12. Copper
13. Bismuth
14. Silver
15. Mercury
16. Platinum
17. Gold

Gold used in the mouth is alloyed with small amounts of nickel or copper.

Amalgams consist of three or more of the following metals: silver, tin, zinc, copper, gold or platinum, to which has been added mercury, which produces the amalgamation.

Any metal will replace any other metal below it in the series.

Two dissimilar metals suspended in normal saliva, which is a fair electrolyte, complete a galvanic battery.

The farther apart metals occur in the electromotive force series, the stronger the current produced.

Certain German physicians and chemists have done a limited amount of research on this problem during the past few years.

Professor Stocks [7] of Berlin has several times called attention to the danger of ptyalism, and has reported cases of impaired health due to mercury poisoning from the chemical dissociation of copper amalgam fillings and absorptions. He was led to make his chemical studies after being a victim of ptyalism from amalgam fillings. He took the position that not only copper amalgam fillings but also pure or silver fillings may constitute a source of danger.

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6. Hodgen, J. D.: Practical Dental Metallurgy, St. Louis, C. V. Mosby Company, 1924, p. 406.

7. Objections to the Use of Amalgam for Filling Teeth, Berlin Letter, J. A. M. A. **90**:1056 (March 31) 1928; Chronic Mercurial Poisoning and the Menace of Amalgam, Berlin Letter, ibid. **89**:388 (July 30) 1927.

In a discussion of Professor Stocks' reported findings, Professor Hoffmann remarked that, although he had not diagnosed cases of poisoning from metallic dentures, he had frequently observed chronic gingival inflammation adjacent to amalgam fillings.

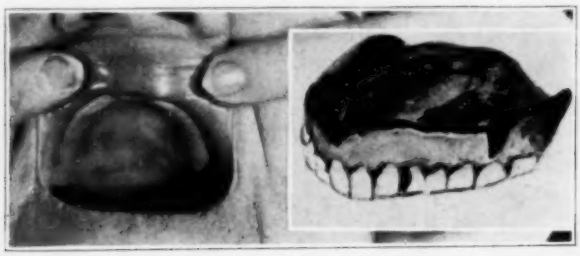

Fig. 1.—Stomatitis, marked degree, began three months after the patient was fitted with a gold-dust vulcanite plate which was probably undercured.

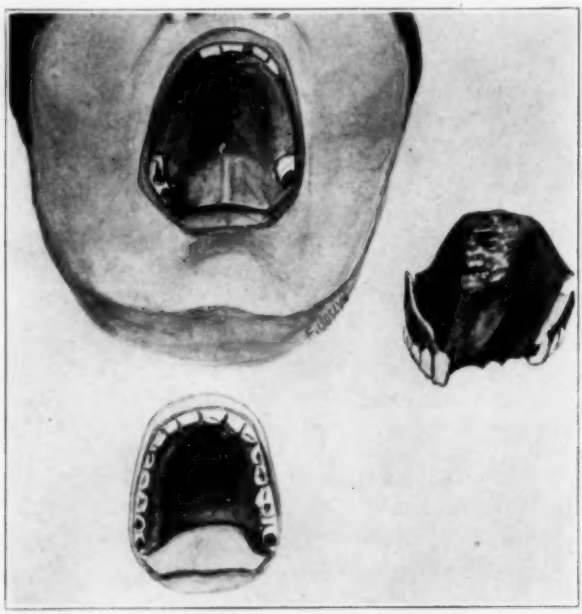

Fig. 2.—Stomatitis with glossitis and inflammatory granulation of the hard palate began a few months after the patient was fitted with a deep red vulcanite dental plate, which showed evidence of undercuring.

Lippmann [8] reported two cases of metallic denture poisoning as follows:

Case 1.—A woman had worn for a number of years an upper dental plate made of gold and a lower plate made of vulcanite. In January, 1925, the lower plate was

8. Lippmann, A.: Disorders Caused by Electric Discharges in the Mouth in Artificial Dentures, Deutsche med. Wchnschr. **56**:1394 (Aug. 15) 1930.

broken and replaced by one made of zinc. After wearing the zinc plate for fifteen months, a physician was called who found her suffering from headaches, trembling, general weakness, anorexia, nausea, metallic taste and sore mouth, with pigmented spots on the margins of the tongue. She also suffered from symptoms of pyelitis and was required to remain in bed for four weeks. During this period, her dental

Fig. 3.—This case showed: a large, dark-colored amalgam filling in a lower right molar; two gold fillings on the left side; gingival inflammation around the amalgam filling, and inflammatory patches across the tongue, between the amalgam and gold fillings. The patient had a metallic taste and burning tongue. With the mouth open, the registered micro-amperage was: initial flow, 18; steady flow, 8.

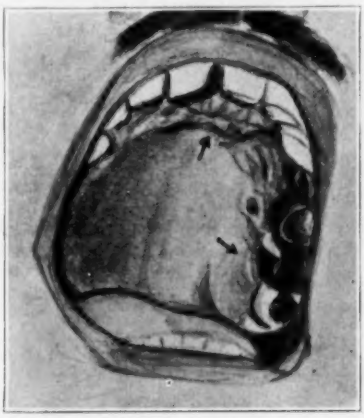

Fig. 4.—This case showed: two dark-colored amalgam fillings on the upper left side; a gold crown over one molar, and gold facing on the upper incisors. The patient had a metallic taste. There was a marked degree of gingivitis intervening between the amalgam fillings and the gold crown and extending to the gold-faced incisors. The registered micro-amperage was: initial flow, 28; steady flow, 20.

plates were removed, whereupon all the oral symptoms rapidly disappeared and her general condition improved. She then resumed the wearing of the dental plates,

only to have a recurrence of all former symptoms. On the advice of Professor Emden, the zinc plate was discarded for a new one made of rubber, after which all former complaints disappeared, and she returned to normal health. Examination revealed that certain areas of both the gold and the zinc plates had undergone oxidation.

Case 2.—A woman had suffered from eructation, nausea, anorexia, salivation, metallic taste, burning tongue, reddened tender mucosa, general weakness and loss of weight. All laboratory findings were approximately negative. The reaction of the saliva was normal. She had been wearing an upper bridge made of Randolph metal for four weeks before the trouble began. The bridge was removed, and a pure gold one substituted, after which improvement began, and soon all oral and general symptoms disappeared.

Professor Lippmann further reported that he had made several tests in the mouth and had found that electric currents were registered at an average strength of one-tenth milliampere and 200 millivolts (one-

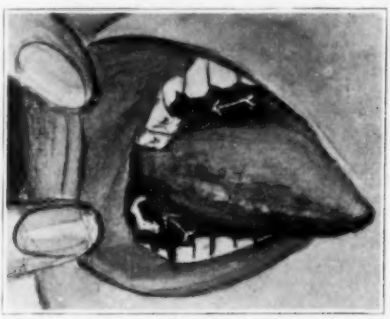

Fig. 5.—In this case the upper right first molar had a gold filing, the lower right first and second molars, amalgam fillings. One amalgam filling showed a marked degree of chemical disintegration. The patient had a metallic taste, burning tongue with mucous patches on the right margin and electric nerve sensations when the mouth was suddenly closed. The symptoms began after the gold filling was put in. The registered micro-amperage was: initial flow, 26; steady flow, 18.

The patients represented in figures 3 and 5 have since had amalgam fillings replaced with gold, with subsequent relief from all oral symptoms. The patient in figure 5 is less nervous and has gained in weight.

fifth volt) when two dissimilar metals are present in the mouth. He also observed that these electric discharges evoke nervousness, disorders of taste, burning tongue and discoloration of the mucosa. He concluded that through electrolysis, heavy metals are constantly dissolved, and quantities of mercury, copper and zinc in ionic form are swallowed for a long time, eventually causing chronic intoxications.

SUMMARY AND CONCLUSIONS

Routine examination of the mouths of forty-five consecutive adults wearing full plate dentures revealed that 42 per cent had either stomatitis or glossitis.

It was found that many of these cases were due to neglected oral hygiene, malocclusion or trauma caused by imperfect adaptation of the plates to the alveolar processes.

In several cases, however, after all ordinary etiologic factors had been eliminated, it was concluded that the poisonous constituents of the dental plates were the offending agents.

Analyses of the plates in two of these cases revealed porosity with free mercury sulphide and sulphur in one, and aluminum powder with a trace of zinc in the other.

Macroscopic and microscopic examination of other offending plates indicated undercuring with porosity.

Each of thirty consecutive adults examined, whose mouths contained two or more metals of different potentialities, registered from 1 to 40 degrees of galvanic current on the micro-ammeter.

One case of a metallic upper plate with amalgam fillings below registered a dangerously high degree of current.

A large percentage of the patients complained of symptoms, such as metallic taste, burning tongue and acute dental nerve sensations, or presented visible mucous lesions adjacent to or between metallic dentures, from which, after a process of elimination, it was concluded that the etiologic factors were galvanic discharges.

Control experiments were made outside of the mouth with various metallic dentures immersed in buffered solution (p_H 6.2 to p_H 7.2). Other tests were made inside the mouth between metals having the same electric potentialities.

Further research is necessary before the dangers of electric discharges in the mouth caused by dissimilar metallic dentures can be fully evaluated.

ABSTRACT OF DISCUSSION

DR. BEDFORD SHELMIRE, Dallas, Texas: Traumatic lesions of the mouth due to sharp teeth and pressure from ill-fitting dentures are usually readily recognized. Stomatitis venenata from the mercury or sulphur in dentures, or from tooth pastes or mouth washes to which the patient may be sensitive, is easily diagnosed and as promptly eliminated by removal of the offending irritant.

That galvanic burns may occur in the mouth has never occurred to me. One can conceive, however, of the oral cavity being a small galvanic battery. There are two dissimilar metals and the saliva acts as an electrolyte.

Since Dr. Lain told me of this discovery about six weeks ago, I began searching for galvanic burns of the mouth. A chronic, superficial, painful erosion of the left side of the tongue, which had resisted all treatments for one year, healed in about five days after removing an amalgam and gold filled tooth that was in

close proximity to the eroded area. This disappearance of the lingual lesion will stimulate further search to corroborate or disprove Dr. Lain's hypothesis. The practice of dermatology will be a pleasure indeed if the hitherto recalcitrant burning tongue can be cured by the removal of a few fillings in the teeth.

Dr. Jeffrey C. Michael, Houston, Texas: This paper is extremely interesting and likely to be helpful. I was interested in what Dr. Lain had to say about burning of the tongue. I am not certain whether he meant true burning tongue, that is, a subjective symptom without any objective manifestations. This is what I have in mind, however. Since the paper of Engman, I think there has been perhaps too much tendency to regard this symptom as a pure psychoneurosis. Following Sluder and others, I have looked for local causes in these cases, but have never seen one that could be satisfactorily explained on this basis. This is where the significance of Dr. Lain's work comes in for me. On the other hand, burning tongue may have a serious significance. For instance, I have seen it as the only prodromal symptom of pernicious anemia, and when associated with anacidity it has always appeared to me to be ominous. I have seen it alternate with so-called Moeller's glossitis, which by the internist is called Hunter's glossitis, and which is always significant of pernicious anemia. All this means that burning tongue is a symptom that should not be dismissed as psychoneurotism until the patient has been thoroughly examined.

Dr. Everett S. Lain, Oklahoma City: Dr. Shelmire has asked about a cure. This is the question uppermost in the minds of not only the laity but the physician. As expressed in my paper, I have done practically all electrical tests within the last thirty days, and, anticipating such questions, just before leaving home, I called my dentists and asked them to help me check up on how many patients had seen their dentists since our tests and had had their amalgam fillings removed. They reported a total of twelve patients traced. Six of these claimed that they were relieved of their oral symptoms soon after the removal of the amalgam fillings.

Dr. Michael brought up the interesting question of the cause of burning tongue. You are doubtless aware that the causes of a burning tongue are perhaps as multiple as the causes of pain. Electrical discharges in the mouth, in my opinion, constitute only one of the many etiologic factors of this disorder.

May I reemphasize in closing the importance of considering galvanic discharges in the mouth as one etiologic factor in the working out of disorders of the mouth that have been heretofore undiagnosed?

EXFOLIATIVE DERMATITIS, JAUNDICE AND MELANODERMA FOLLOWING THE USE OF NEOARSPHENAMINE

REPORT OF A CASE*

F. RONCHESE, M.D.
PROVIDENCE, R. I.

A case of severe exfoliative erythrodermia with a peculiar distribution and concomitant jaundice following the use of neoarsphenamine was followed by a peculiar melanoderma. I think that the case is interesting because it may help to throw light on the pathogenesis of the syphilitic leukoderma.

REPORT OF A CASE

History.[1]—M. S., a white woman, brunette, born in Greece, aged 38, a housekeeper, was admitted to the Providence City Hospital on Feb. 23, 1930, with a generalized papular rash and a 4 + Wassermann reaction of the blood. She had always enjoyed good health until about one month previous to admission, when she had noticed a sore throat, pain in the joints and a rash over the body. She had been married for fifteen years, and was childless (infantile uterus). The husband was under antisyphilitic treatment, and gave a negative Wassermann reaction.

Large, round, copper-red macules and huge, oval infiltrated maculopapules were present on the skin, over the chest, back, face, upper extremities and soles.

From February 27 to March 14, the patient received 2.4 Gm. of neoarsphenamine intravenously in eight doses of 0.3 Gm. every other day. The rash cleared up, leaving small purplish-brown spots at the sites of the largest and most infiltrated papules.

The patient was discharged on March 15, and continued the treatment at the outpatient department, receiving the ninth dose of 0.3 Gm. of neoarsphenamine on March 20 and another dose on March 27.

About two hours after the last injection, she noticed itching and reddening of the soles and the palms. The itching and redness gradually spread over the entire body and were associated with vomiting. The sclerae and the under side of the tongue had a slightly icteric tinge.

Second Admission.—The patient was readmitted to the hospital on March 29. After two days she presented a dull purplish erythema and edema involving the entire surface of the body, except many round and oval areas, from 1 to 3 cm. wide, scattered over the back, chest, arms and face, where the skin was a deep yellow, with a sharp line of demarcation between the edematous and the non-edematous skin. The ensemble was a strange picture of a yellow, pitted skin on a purplish-red, swollen and oozing surface. Some yellow areas had a pigmented spot in the center.

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* Submitted for publication, April 3, 1931.

* From the Skin Service, Providence City Hospital.

1. The patient was presented at the meeting of the New England Dermatological Society in Boston, Feb. 11, 1931.

The yellow, nonedematous and nonerythematous areas occupied the sites of the secondary syphilids, which had faded two weeks before under the treatment with neoarsphenamine and had left a central spot of pigmentation.

The edge of the liver was about four fingerbreadths below the costal margin. The spleen was palpable, smooth and tender, reaching down to the level of the umbilicus.

The dermatitis progressed to a darker yellow discoloration of the nonedematous areas and to an intense desquamation of the erythematous and edematous part of the skin.

The patient was very uncomfortable, and had a moderate fever. The urine was black with a specific gravity of 1.028, and contained bile; albumin, sugar, leucine and tyrosine were absent.

The chemical analysis of the blood revealed: sugar, 165 mg. per hundred cubic centimeters; nonprotein nitrogen, 39 mg., and creatinine, 1.5 mg. The differential count showed: polymorphonuclears, 59 per cent; small lymphocytes, 29 per cent; large lymphocytes, 3 per cent; transitionals, 3 per cent, and eosinophils, 6 per cent.

Treatment consisted of eight intravenous injections of 1 Gm. of sodium thiosulphate daily and two intravenous injections of 500 cc. of a solution of sodium chloride.

The patient improved gradually, and was discharged on April 26, with a brown skin still desquamating large thin scales over the body and thick, horny sheets on the palms and soles.

When the desquamation subsided, a month later, the skin presented the appearance shown in figures 1 and 2. With more or less intensity, the hyperpigmentation involved the entire surface of the body, except the previous sites of the syphilids, which appeared as normally colored skin, some with a pigmented spot in the center.

On March 3 the results of the Wassermann and Hinton tests were doubtful; on July 8, they were negative. Several intracutaneous tests with different dilutions of neoarsphenamine were followed by a very slight reaction.

A difference in perspiration (determined by the von Minor method) between the hypopigmented and hyperpigmented areas was not appreciable.

Microscopic sections of hypopigmented and hyperpigmented skin when stained with hematoxylin-eosin showed an unequal distribution of pigment. In some parts of the basal layer it was present in great quantity; in other parts it was almost absent. The pigment was absent in the upper layers of the epidermis. A small quantity was scattered over the upper part of the papillae, and a few granules were in the median layer of the chorium, mostly around the vessels.

In July, the patient, who was in excellent general condition, began to receive a series of injections of quinine bismuth iodide and later injections of mercuric salicylate, both being well tolerated. The skin was still very dark, particularly over the lumbar region, with sharp demarcation between the pigmented and the depigmented areas. At the end of March, 1931, the melanosis appeared a little lighter, and the pigmented spots in the middle of the white areas had disappeared. Apparently, the melanosis will keep on fading slowly; it will probably always be demonstrable on account of the unequal distribution.

COMMENT

The case presents some interesting points: (1) the coexistence of exfoliative erythrodermia and jaundice; (2) the gravity of the case and the favorable outcome; (3) the distribution of the dermatitis and exfolia-

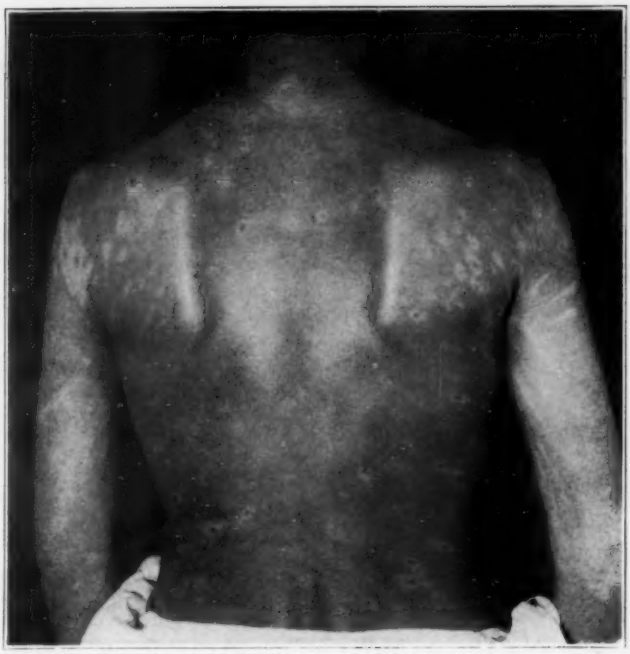

Fig. 1.—Showing the unequal distribution of the pigment. The hypopigmented areas with a central hyperpigmented spot correspond to the previous macropapular syphiloderma.

Fig. 2.—Front view of figure 1.

tion over the entire body except the sites of the roseola; (4) the subsequent melanoderma conforming exactly to the dermatitis and avoiding the site of the roseola (the hyperpigmented spots in the center of some of the largest depigmented areas being the sequelae of the papules); (5) the unusual location of a syphilitic leukoderma over the back, chest and arms, whereas the neck was almost free, and (6) the persistence of the hyperpigmentation, which was almost unmodified after a year.

The coexistence of exfoliative erythrodermia and jaundice is a manifestation of severe intoxication. Clinical observations demonstrate that the combination occurs but seldom, and that the course is often fatal.[2]

The exfoliative dermatitis is ordinarily generalized over the entire surface of the body.

In regard to the melanoderma, the more common sequel of a papular syphiloderma is hyperpigmentation, and in some cases in colored persons a shoe-black hyperpigmentation at the sites of the preceding papules. Therefore, cases of white spots of depigmentation following a syphiloderma and conforming to the preceding papules have been reported by some authors.[3] The pathogenesis of the depigmentation following various diseases is still not clear. It has been extensively reviewed by Almkwist.[4]

In regard to the melanoderma following an arsenical exfoliative dermatitis, O'Donovan [5] reported an interesting case of widespread pigmentation with circular white spots of depigmentation, and quoted the observations of Addison and Pringle, describing a widespread pigmentation with "raindrop-like" nonpigmented areas as typical for the arsenical melanosis.

Dohi [6] was not of the same idea, and said that the most common type of arsenical melanosis is a diffuse melanosis. He reported a case of vitiligo-like leukomelanoderma as uncommon. The case was interesting for its connection with a disturbance of the vegetative nervous system

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2. Merklen, Pautrier and Wolf: Intoxication mortelle par néosalvarsan avec ictère érythrodermie exfoliante et purpura géant, Bull. Soc. franç. de dermat. et syph. **31**:60, 1924. Milian and Solente: Ictère toxique du novarsenobenzol, ibid. **31**:128, 1924. Barthélemy and Cohen: Ictère avec érythrodermie concomitante, Ann. d. mal. vén. **24**:921, 1929.

3. Fournier, Gaucher and Milian, quoted by Wahl, M.: La syphilis pigmentaire du cou, Paris méd. **1**:240 (March 5) 1927. Freudenthal, W.: Luetishe Leukomelanodermie in Form einer Pseudo-Vitiligo, Arch. f. Dermat. u. Syph. **156**:142, 1928; Gior. ital. di dermat. e. sif. **69**:1731 (Dec.) 1928.

4. Almkwist, J.: Sur la leucodermie d'origine variée; Deux cas postpityriasique, Acta dermat.-venereol. **4**:441, 1923.

5. O'Donovan, W. J.: Melanosis After Arsenobenzol, Brit. J. Dermat. **37**:87 (Feb.) 1925; Uncommon Ill Effects of Salvarsan Treatment, Brit. M. J. **2**:742 (Oct. 27) 1928.

6. Dohi, S.: Leukomelanodermie durch Salvarsanschadigung des vegetativen Nervensystems, Arch. f. Dermat. u. Syph. **159**:269 (Feb.) 1930.

Fig. 3.—The same patient eight months later.

Fig. 4.—Front view of figure 3.

(lack of perspiration in the white parts more evident after the injection of pilocarpine, urticaria factitia alba, falling of the hairs on the white spots and regrowth of white hairs, etc.). He quoted six other cases of vitiligo-like leukomelanoderma from the literature, but some of them seemed to demonstrate, together with a vitiligo-like appearance, a sharp macular appearance, as did the front view of Dohi's patient.

Garnier [7] reported a case similar to that of O'Donovan,[5] which was observed from the onset and was followed by a slight pigmentation "which respected the previous sites of syphilides." In O'Donovan's and Garnier's cases the neoarsphenamine dermatitis was generalized, but the melanosis was not. Garnier noticed where the pigmentation was missing. O'Donovan did not observe the roseola in one patient, as probably other investigators reporting observations of arsenical leukomelanoderma failed to do.

Garnier's case and mine ought to explain the pathogenesis of the raindrop-like arsenical melanosis, occurring generally in syphilitic patients, as due to a peculiar unequal distribution of the pigment over the body and, more exactly, to a lack of hyperpigmentation of the areas of the skin altered chiefly in their vascular system by a previous injury (roseola, pyodermitis, eczema, dermatomycosis, etc.). The syphilitic macular atrophy of the skin is an example of a local, deep elective injury by Spirochæta pallida.

I say "ought to explain," because, if the raindrop-like type is considered characteristic by prominent investigators like Addison and Pringle, I found cases of arsenical melanoderma without raindrop-like white spots but an irregular, vitiligo-like disposition in spite of a definite history of a previous macropapular roseola (Schlammadinger [8]), as well as in cases in nonsyphilitic patients who were supposedly without previous injury to the skin (Jausion, Longin and Gauch [9]).

However, Dohi's [6] case and other analogous ones easily lead one to think of the possibility of an unnoticed previous injury (macropapular roseola, pyodermitis or the like) corresponding at least to some of the white spots, together with an endocrinosympathetic disturbance, as the cause of the leukoderma.

Garnier's [7] case and mine, as well as the few observations of depigmented spots in the site of previous syphilids, ought also to give the

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7. Garnier, G.: Les érythèmes des arsénobenzoles, Paris, Jouve & Cie, 1929, p. 89.

8. Schlammadinger, J.: Mit Melanodermie einhergehende Salvarsaninto xikationen, Wien. klin. Wchnschr. **43**:556 (May 1) 1930.

9. Jausion, Langin and Gauch: Leucomélanodermie généralisée post-érythrodermique après cure au stovarsol, Bull. Soc. franç. de dermat. et Syph. **37**:552 (May) 1930.

simplest demonstration of the pathogenesis of the syphilitic leukoderma and of the so-called leukoderma colli. This is considered by the majority of the authors to be due to a depigmentation of a normally colored skin, in the site of a previous noticed or unnoticed syphiloderma and to a hyperpigmentation of the surrounding sound skin; by other investigators it is considered as a primitive, syphilitic, pigmentary disturbance. Ehrman and Wertheim, quoted by Stokes,[10] spoke of a form of functional inhibition of the pigment cells of the basal layer of the epidermis within the macular or papular lesions produced by the presence of Spirochæta pallida.

Garnier's [7] case and mine, as do probably other observations as well, will strongly support the most simple pathogenesis of the syphilitic leukoderma, as due to a secondary hyperpigmentation of the skin surrounding the site of a previous lesion (roseola) of the vascular or pigment cells.

This hyperpigmentation may be due to the arsenic or to other factors, acting directly or through the endocrinosympathetic system.[11]

SUMMARY

A case has been reported of dermatitis with jaundice followed by a generalized melanoderma, respecting, as did the erythrodermia, the areas previously the site of a roseola, following the use of neoarsphenamine.

The absence of erythrodermia and pigmentation in these areas, leading to a picture of a leukomelanoderma, should help to demonstrate the pathogenesis of the syphilitic leukoderma as due to a secondary hyperpigmentation of the skin surrounding the sites of a previous noticed or unnoticed syphiloderma.

182 Waterman Street.

10. Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Company, 1927, p. 584.

11. Dohi (footnote 6). Gougerot: Hypo et hypercromies syphiloides post-lésionnelles du cou, Bull. et mém. Soc. méd. d. hôp. de Paris **45**:1347 (Oct.) 1921; Le traitement de la syphilis en clientèle, Paris, A. Maloine et fils, 1927, p. 315. Gougerot, Barthélemy and Weill: Leucomélanodermie des parties couvertes consecutive à un eczéma chez une syphilitique ancienne, Bull. Soc. franç. de dermat. et syph. **37**:465 (April) 1930. Gougerot, Blum, Meyer, Cohen and Weill: Leucomélanodermies post-lésionnelles, ibid. **38**:41 (Jan.) 1931.

TRICHOSTASIS SPINULOSA*

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History.—S. T., aged 56, of Jewish extraction, a butcher, born in Russia, presented himself at the department of dermatology at the Montreal General Hospital in September, 1930, on account of an eczema, erythematosquamous and slightly exudative in character, over the right leg, thighs, abdomen and back. The condition began in June, 1930; it was characterized by considerable pruritus and had not yielded to treatment. The patient was admitted to the hospital, and he gradually responded to local and general treatment. No further mention need be made of this condition.

While he was in the hospital, attention was directed to a very peculiar condition of his hair, a condition of which the patient was totally unaware. He was a well built man, of a swarthy, somewhat sallow type. His hair was turning gray, and he presented a hippocratic type of baldness, with the vertex quite bald. Numerous blackish, comedo-like dots that on closer examination proved to be tufts of short, projecting, delicate hairs which protruded from the follicular orifices were seen extending over the vertex, the nape of the neck, the entire forehead, the malar region of the cheeks and the entire upper part of the back; they were noted particularly in the midline, and slightly in the midline of the chest, interspersed throughout a mildly hairy chest. These tufts projected from one sixteenth to one eighth of an inch above the level of the skin, and could be easily plucked out. A slightly horny plug at times enclosed these collections of hairs, although they frequently could be extracted readily without such an encasement. A mild oiliness of the skin of the back and face was noted, but no comedones were seen. There was present over the outer aspects of the upper part of the arms and thighs a mild keratosis follicularis, but there was no evidence in these areas of grouped follicular hairs as in the areas previously described. It is to be noted that this peculiar condition of the hairs was confined to the so-called seborrheic areas, that it was exactly symmetrical and, indeed, could easily be mistaken for small comedones.

On account of this rare condition, a series of special examinations was made.

Examinations.—A general medical examination revealed a healthy man. Special examinations showed: 1. The urine contained no albumin and no sugar. 2. The blood sugar content was normal, and no disturbance of the carbohydrate metabolism was present. 3. The basal metabolic rate was +4. 4. The roentgen examinations of the sella turcica and the skull gave negative results. 5. The medical specialist's report stated that there was no clinical evidence of dyspituitarism or of thyroid disturbance. 6. The Wassermann reaction was negative.

Microscopic examination of many extracted tufts mounted in glycerin or in a solution of potassium hydroxide showed that they had a common characteristic picture with certain variable features. The tufts contained from four to thirty to

* Submitted for publication, Feb. 8, 1931.

* From the Department of Dermatology and Pathology, the Montreal General Hospital.

* Read at the Fifty-Fourth Annual Meeting of the American Dermatological Association, Toronto, Canada, June, 1931.

Fig. 1.—Many black dots are seen scattered over the forehead, representing the lesions in trichostasis spinulosa.

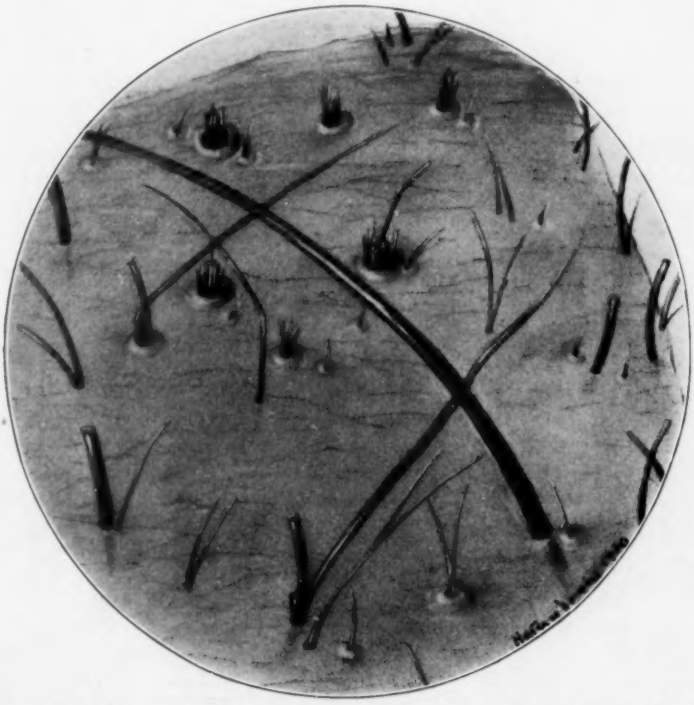

Fig. 2.—Drawing made of the surface of skin taken from the nape of the neck as seen through a binocular microscope. "Pinselhaare," grouped hairs and normal coarse hairs are seen.

forty fine, parallel hair stumps. Those tufts that were extracted from the scalp and from the nape of the neck contained the largest number of hairs. Many of the tufts were enclosed in a mildly hyperkeratotic sheath, while others were quite free of this sheath. The protruding ends of the hairs were smooth, rounded and mildly tapering, whereas the follicular "roots" were often irregularly fractured transversely and were rough and slightly bulbous at times. Very rarely a looped hair was seen. The hairs were finely pigmented, nonmedullated and were from

Fig. 3.—From ten to fifteen hairs are seen which have emerged without any horny capsule.

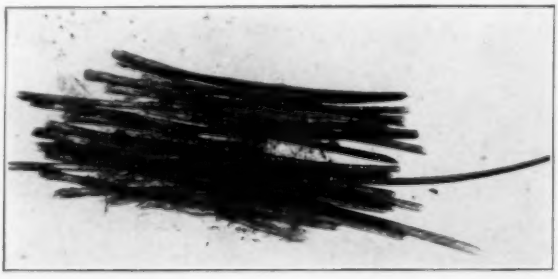

Fig. 4.—A group of "Pinselhaare" showing slight horny sheath. The proximal ends are slightly bulbous.

one tenth to one fifth of the size of a normal hair in this man (figs. 2, 3 and 4). Whereas these tufts were usually isolated and distinctly apart from either the lanugo or the coarser hairs, on the chest three or four of these fine short hairs surrounded a mildly coarse hair that protruded from the same follicle.

Histologic Report.—Specimens were obtained for biopsy from an area in the midline of the back and also from the nape of the neck. The earlier routine sec-

Fig. 5.—From thirty-five to forty "Pinselhaare" taken from the nape of the neck.

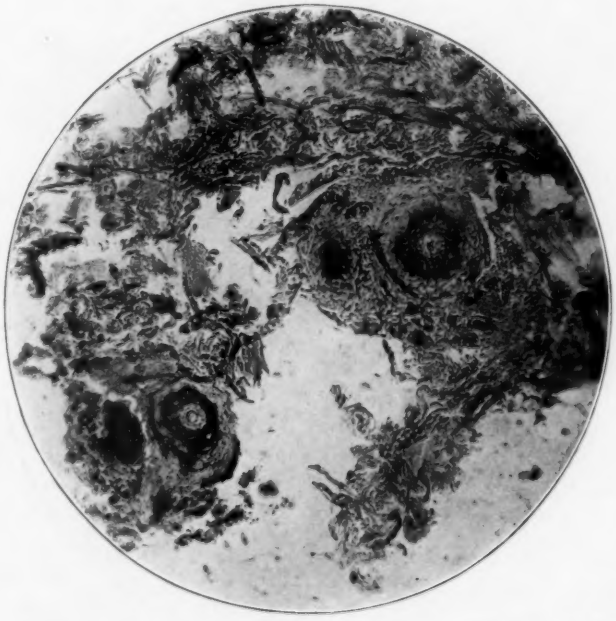

Fig. 6.—Semitransverse section, showing a follicle at a hair papilla and one directly above a hair papilla, one element showing prickle cells, the other showing prickle cells, hyperkeratotic band and central "Pinselhaare."

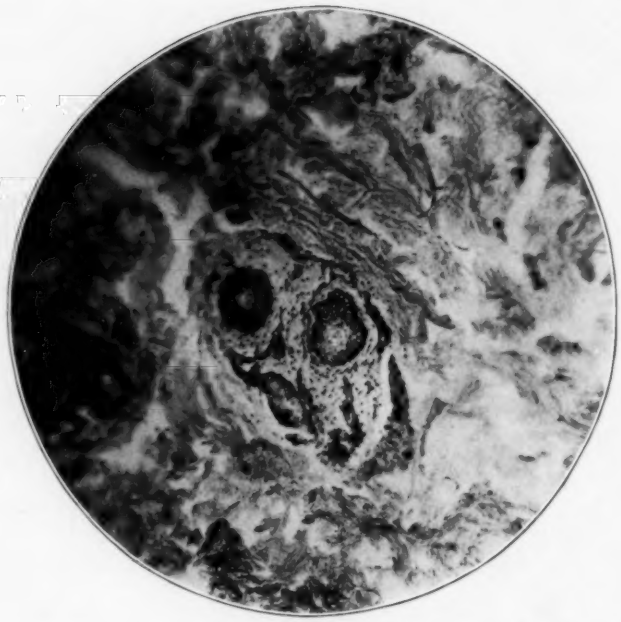

Fig. 7.—Semitransverse section showing a "Pinselhaare" follicle enclosed in a common dermic capsule, comprising two buds each containing a hair, surrounded by a hyperkeratotic band and a layer of prickle cells.

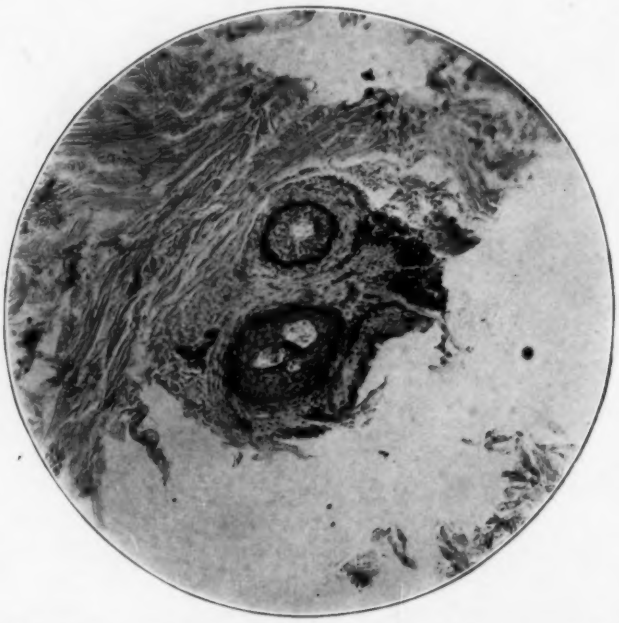

Fig. 8.—Semitransverse section showing a well defined dermic sheath, enclosing two buds, one containing three "Pinselhaare" and the other containing only one.

tions from the midline of the back demonstrated the difficulties encountered when an attempt to explain the clinical picture of this disease based on the histologic structure was made. There was a tremendous disproportion between the large number of "tufts" as observed clinically, and the paucity of such evidence in the histologic picture. These two observations could not be correlated, and the developmental structure of these hairs could not be followed. Such disparities and the resulting difficulties encountered have frequently been noted in other recorded observations. Therefore the second section from the nape of the neck was taken because there were present numerous tufts containing large numbers of hairs interspersed throughout a structure of normal coarse hairs. Some hundreds of serial sections were cut in a direction at right angles to the skin; a second block was similarly cut transversely in a plane at an acute angle with the surface of the

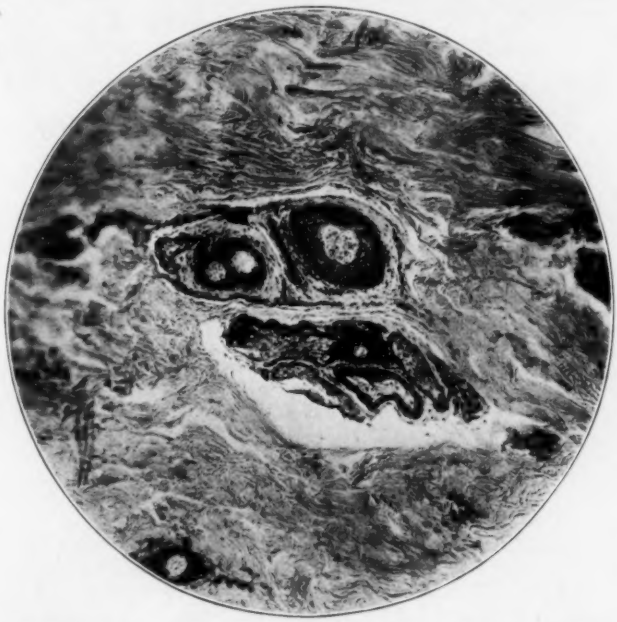

Fig. 9.—Semitransverse section showing well defined follicular buds. Note the layers of prickle cells surrounding two individual hairs and also four hairs in the other bud which have lost their individual layers of prickle cells but are each surrounded by a hyperkeratotic band.

skin. There was great difficulty in embedding and sectioning this block and a good deal of experimenting was done before success was attained. More extensive information was undoubtedly obtained from this block. In this area there was a third formation of hair with which to deal; that is, a convergence of coarse hairs, usually two, sometimes three, resulting in the emergence of such hairs from one follicular orifice as is frequently noted in acne keloid. This feature could be observed in numerous sections.

The following description is based on a study of a large number of serial sections. In the longitudinal sections it was possible to trace follicles throughout their course, whereas with transverse sections it was found that follicles could be traced for part of their course.

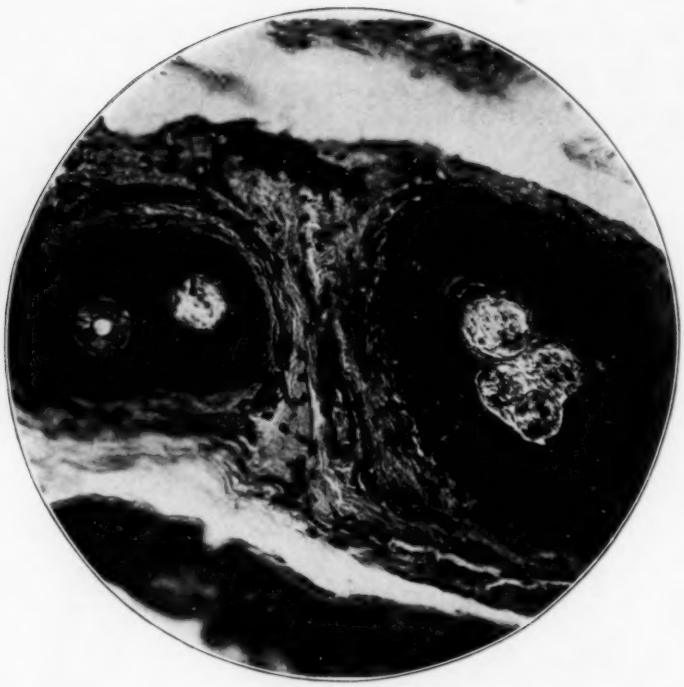

Fig. 10.—High power magnification of figure 9 to show hyperkeratotic band about the individual hairs.

Fig. 11.—Semitransverse section showing cystlike follicles with enclosed hairs which lie directly in contact with one another.

Fig. 12.—Semitransverse section showing an increasing number of aggregated hair buds. The "Pinselhaare" have lost their individual hyperkeratotic bands.

Fig. 13.—Semitransverse section showing large cystlike follicles containing numerous sections of "Pinselhaare."

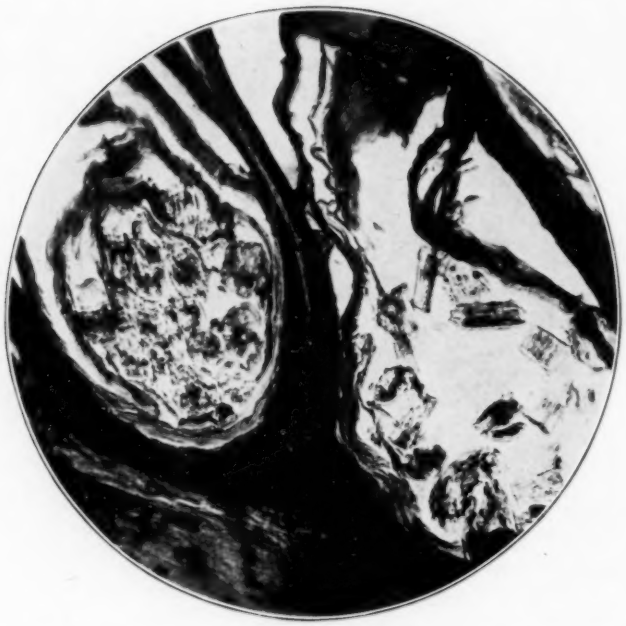

Fig. 14.—High power magnification of figure 13, showing compressed wall of cystlike follicles made up of prickle cells and hyperkeratotic band enclosing many "Pinselhaare."

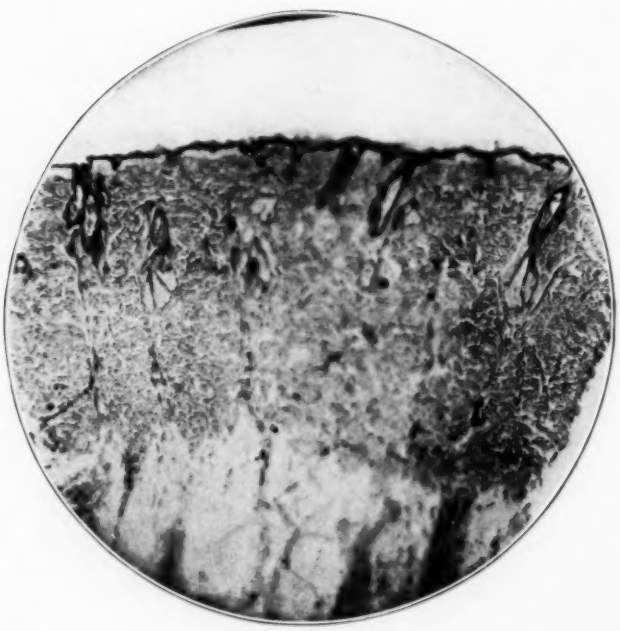

Fig. 15.—Low power magnification of longitudinal section, showing dilated cystlike follicles, some of which are empty; others contain hyperkeratotic plugs; hairs are present in some of these areas.

Deep down in the dermis, on a level with the sweat glands and lying directly above the fatty tissue, a number of individual hair roots were seen, smaller than the ordinary hair roots, but otherwise well formed as regards structure and staining characteristics of the individual cells. These hair roots were surrounded by a rather thick dermal sheath made up of compressed collagen fibers (figs. 6-13). Such a demarcation from the regular collagen fibers of the dermis could always be easily observed. The prickle cell layer of the hair root was well defined and directly within the layer in sections cut above the papilla, a thin hyperkeratotic zone was seen surrounding the transverse section of a small nonmedullated hair (figs. 9 and 11). In sections immediately above this, there was an enlargement of hair follicles, and the individual follicles contained two or three fine hair structures separated from each other by the cells of the prickle cell layers (figs. 8 and 9). In the sections above this, there was a beginning grouping of papillary nests, each containing one or more discrete hairs and the whole surrounded by a continuous dermic coat (figs. 8 and 9). Above this again, the sections showed more and more a grouping of follicular elements that frequently contained four or more hairs, and in many instances each hair was encased in its own hyperkeratotic sheath (fig. 11). Toward the periphery, increasingly larger follicular cystlike areas were seen, in which numerous hairs were lying, varying in numbers, and the hyperkeratotic band, previously mentioned, ceased to surround individual hairs, but was readily observed lining the follicular wall (figs. 14 and 15). Numerous widely dilated follicles were observed which had lost their content; others presented a marked hornified content without any apparent hairs (probably depending on the angle of section of the follicle) and others were noted to contain many small nonmedullated hairs (fig. 15). Many coarse hairs in this section showed also a moderate hyperkeratosis of the follicular funnel. The follicular orifices were frequently observed to be widely dilated. The irregularity of the outline of the follicle in the upper part of the dermis in longitudinal sections was also observed. The epidermis was hyperpigmented and of normal structure, and the dermal structures were also normal. The arrectores pilorum appeared to be rather well developed. No inflammatory changes of any kind were found.

COMMENT

Cases similar to the one herein reported have been described and recorded. Mitchell,[1] in 1925, recorded a similar case with excellent photographic demonstrations of the clinical observations and a review of the literature. Cases have also been observed in Germany, Austria and Italy. Galewsky,[2] who recorded the original observations, found the condition to be rare, indeed. Other observers have apparently seen it more frequently.[3] The observations of Hochstetter,[4] in that they recorded histologic evidence, are of importance.

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1. Mitchell, James Herbert: Trichostasis Spinulosa or Pinselhaar, Arch. Dermat. & Syph. **11**:80 (Jan.) 1925.

2. Galewsky: Ueber eine eigenartige Verhornungsanomalie der Follikel und deren Haare, Arch. f. Dermat. u. Syph. **106**:214, 1911.

3. Franke: Das Pinselhaar: Thysanothrix, Dermat. Wchnschr. **55**:1269, 1912. Nobl: Trichostasis spinulosa, Arch. f. Dermat. u. Syph. **114**:611, 1913.

4. Hochstetter: Ueber eine seltene Anomalie des Haarsveitsels, Dermat. Ztschr. **20**:316, 1913.

One of the chief interests in this condition is the determination, if possible, of the histobiologic structure that in a hair follicle could lead to such a peculiar development of the hair. Two theories were advanced by Hochstetter (quoted from Mitchell). 1. "There is an abnormal congenital separation of the papilla of the follicle, as is the case with the papilla of the pig, or else there are multiple papillae. 2. All the hairs are produced by one papilla, but the hairs are not expressed from the follicle as they are formed. They remain in situ and form the brush-like bundle." The view has also been advanced that in certain occupations, oily substances or chemical irritants coming in frequent contact with the skin determined a follicular hyperkeratosis, the latter causing the stasis of lanugo hairs in the follicle and giving rise to trichostasis spinulosa (Poschacher [5]). I am not in accord with this view. In the case described, as in some others, the symmetry of the eruption, its distribution and the histologic evidences determined were, I believe, incompatible with such a view. Further, the idea that there was a trichostasis in the follicle does not seem to fit in with the observations made. If the hyperkeratosis disturbed the proper projection of the hair, why were there not coiled and ball-like irregular hairs as in lichen pilaris? (Kyrle [6]). The demonstrated hairs were exactly parallel; their projected ends were burnished, smooth, and mildly tapering, as are the ends of normal hairs. These "trichostatic" hairs were undoubtedly very fragile; they were frequently separated from their papillae, particularly in the upper half of the follicle, but some of these hairs developing deep down in the follicle were apparently retained in direct contact with their rudimentary papilla. The separation would seem to be the result of the associated hyperkeratosis. Examination of many serial transverse and longitudinal sections from the case described leads us to the view that the whole process probably represents a late development in life of a congenital malformation of the follicles; that these follicles have frequently many potential embryologic buds in their walls which may in later life develop immature nonmedullated hairs and that such a development occurs in association with and not as a result of hyperkeratosis of the follicle which extends throughout its entire length.

The view expressed of the existence of a fully developed hair papilla in association with other immature papillae in the same follicle would probably account for the association of a stout hair with other "trichostatic" hairs, a condition observed once in the patient. Histologically, this could not be verified. Hair buds of equal potential development and of irregular numbers existed, I believe, in the follicle. This view

5. Poschacher, A.: Ichthyosis thysanotrichica, Acta derm.-venereol. **6**:107 (Jan.) 1925.

6. Kyrle, Josef: Histobiologie der menschlichen Haut und ihrer Erkrankungen, Berlin, Julius Springer, 1925-1927, vol. 2.

is further supported by the clinical observation that these "trichostatic" follicles contained purely "trichostatic" hairs. I believe, from my observations, that in trichostasis spinulosa numerous resting buds exist in the same follicle and that these, in response to an unknown stimulus, develop these numerous individual hairs of immature type and that this stimulus at the same time gives rise to an associated hyperkeratosis that even extends down to the origin of the hair. It would seem that the original name, trichostasis spinulosa, which clinically described the condition, is not exactly a suitable name when viewed in the light of the histobiologic structure.

Dr. L. J. Rhea, director of the pathological department of the Montreal General Hospital, assisted in the preparation and consideration of the microscopic sections.

ABSTRACT OF DISCUSSION

DR. CHARLES M. WILLIAMS, New York: I think that probably every one of us has seen this condition frequently. The first case I recall was that of an old lady on whom I was doing electrolysis. The whole mass came out on the needle. I assumed that it was sebaceous material and let it go at that. The next day after my attention was called to this condition, a woman came into my office to consult me; she had a dot on her nose; we demonstrated one or two of these follicles full of hair, without any difficulty whatsoever. A short time later my attention was called to Demodex folliculorum; I washed my own nose carefully and did not find any demodex but did find Trichostasis spinulosa. Last Saturday I demonstrated the same condition in two physicians, without any difficulty.

I think it is a common condition in persons over 50, but I do not know when it begins. I do not recall seeing the condition in youths, but I have seen it frequently in persons of middle and advanced age. I think that it can be found easily if one looks for it; the demonstration of this common condition is a beautiful example of the necessity of making a careful examination, instead of jumping at conclusions.

CHRONIC COCCIDIOIDAL DERMATITIS

REPORT OF AN UNUSUAL CASE *

ERWIN P. ZEISLER, M.D.
CHICAGO

The publication of a large number of additional cases of coccidioidal granuloma within the last few years has brought the list of reported cases to considerably over 200. The more widespread distribution of this serious disease and its epidemiologic features have been well brought out in the recent report of Cummins, Smith and Halliday.[1] In a survey of the geographic distribution in 182 cases, it was shown that in 80 per cent infection was acquired by residents in California, principally among the laboring classes. Additional new cases have been reported from South America, chiefly Argentina and Brazil, de Souza Campos and Almeida [2] having described 10 cases in São Paulo. Pulford and Larson,[3] in their recent paper, stated that the disease is becoming more prevalent and widespread and can be no longer considered as indigenous to California and the adjoining western states. The protean character of the disease, the close resemblance to tuberculosis, the frequent and early involvement of the lungs, subcutaneous tissues, bones and joints are emphasized in all the recent literature. The dermatologic features, which were first recognized by Posados [4] of Buenos Aires, in 1892, and by Rixford and Gilchrist,[5] Montgomery and co-workers [6] and Ophüls [7] prior to 1900, have again been brought to one's attention by the interesting reports of Jacobson,[8] Morrow,[9] and Chipman and Templeton.[10]

* Submitted for publication, Feb. 8, 1931.

* Read at the Fifty-Fourth Annual Meeting of the American Dermatological Association, Toronto, Canada, June, 1931.

1. Cummins, W. T.; Smith, J. K., and Halliday, C. H.: Coccidioidal Granuloma: Epidemiologic Survey, with Report of Twenty-Four Additional Cases, J. A. M. A. **93**:1046 (Oct. 5) 1929.

2. de Sousa Campos, N., and Almeida: Ann. de fac. de med. de São Paulo **2**:203, 1927.

3. Pulford, D. S., and Larson, E. E.: Coccidioidal Granuloma: Report of a Case Treated by Intravenous Dye, Colloidal Lead and Colloidal Copper, with Autopsy Observations, J. A. M. A. **93**:1049 (Oct. 5) 1929.

4. Posados: Rev. de chir. **21**:277, 1900.

5. Rixford and Gilchrist: Johns Hopkins Hosp. Rep. **1**:210, 1900.

6. Montgomery; Ryfkogel, and Morrow: J. Cutan. Dis. **21**:5, 1903.

7. Ophüls: J. Exper. Med. **6**:443, 1905.

8. Jacobson, H. P.: Coccidioidal Granuloma: Clinical and Experimental Review with Case Reports, Arch. Dermat. & Syph. **21**:790 (May) 1930.

9. Morrow: Report before the International Dermatologic Congress, Copenhagen, 1930.

10. Chipman, E. D., and Templeton, H. J.: Coccidioidal Granuloma, Arch. Dermat. & Syph. **21**:259 (Feb.) 1930.

The present case is reported on account of certain unusual clinical, bacteriologic and histologic features. It is the fifth one to be seen in the Chicago district.

REPORT OF CASE

History.—J. S., aged 36, an aviator, was admitted to the Cook County Hospital on May 20, 1929, on account of multiple lesions of the face, arms, chest and back. The diagnosis made on admission was mycosis fungoides. The family and past history were essentially unimportant. The disorder began in August, 1927, as a small pustule on the left side of the nose at the site of a scratch incurred a month previously while hunting mountain lions in the San Joaquin Valley in California. The patient stated that one of his dogs was bitten, and that after washing out the wounds and without cleansing his hands he scratched a "pimple" on his nose. Soon after this the pustule enlarged, opened and began to discharge pus. Smears at this time showed staphylococci, and under radium treatment the lesion became smaller. In December, the patient had a chill and fever and was confined to his bed by a griplike attack. Following this, several new, tender, painful lesions appeared on his back and forearm. In spite of a negative Wassermann reaction, he was treated repeatedly with neoarsphenamine and potassium iodide. Roentgen rays and copper sulphate wet dressings were used locally. Many fresh lesions continued to develop on the back and face, especially on the upper lip, nose and around the eyes. The patient then went to Hot Springs, where he was treated for two months with iodides and roentgenotherapy, which healed many of the "ulcers," although the swelling and distortion of his face persisted. On his return to California, he was told that he had either blastomycosis or coccidioidal granuloma, and he decided to come to Chicago to be treated.

Physical Examination.—The patient was of medium height and well nourished, and except for the cutaneous condition, the internal examination gave entirely negative results. The lymph glands and spleen were not enlarged. Repeated urinalyses gave negative results. The white blood count ranged from 8,500 to 9,200. The red blood count was 4,460,000. The Wassermann and Kahn tests were negative on several occasions. The temperature on admission was 98 F., the pulse rate 92, and the respiratory rate 24. Repeated roentgen examinations of the chest failed to reveal any pulmonary lesions.

Cutaneous Examination.—Over both eyebrows, around the nostrils and root of the nose and on the right side of the upper lip were peculiar, reddish-brown, granulomatous, elevated nodules covered with thick, dark brown crusts, on removal of which a grayish-yellow pus exuded. The ala nasi of the left side was almost completely obstructed. On the forehead, cheeks, nose, upper lip and ears were smooth, shining, irregularly indented, atrophic, grayish scars with a narrow, brown pigmented border. Over the upper part of the chest were irregular, figurate lesions, evidently healed, showing a depigmented, atrophic center and a narrow, hyperpigmented border. Along the lower ribs of the left side, in an irregular zoniform distribution, were groups of discrete and confluent, brownish, lichenoid papules the size of a split pea. The back was profusely covered with oval, round and irregular papules and plaques with their long axis parallel to the course of the ribs, some active, crusted, granulomatous lesions similar to those of the face, others of the lichenoid, papular variety and still others healed, atrophic, annular scars. There were no lesions below the waist and only a few healed areas on the upper part of the arms at this time. No subcutaneous lesions were observed.

Diagnosis.—In considering the diagnosis on admission, the resemblance to mycosis fungoides was noted, especially on account of the fungating lesions of the eyebrows and face. Tuberculosis of an unusual type, blastomycosis and leukemia cutis were also considered, but a definite diagnosis was deferred until the results of further histologic and bacteriologic studies were available. The resemblance of the lichenoid papules to those of miliary lupus or to the lichenoid, depigmented type of sarcoid was also noted. The correct diagnosis was established by the demonstration of *Coccidioides immitis* in tissues, cultures and smears and by inoculation of a guinea-pig.

Fig. 1.—Verrucose papules of the eyebrows, nose and upper lip; condition on admission to hospital.

Subsequent Course and Treatment.—Treatment was instituted with antimony and potassium tartrate intravenously in increasing doses every other day, potassium

iodide by mouth and roentgen rays. After six weeks this regimen had to be discontinued as a septic fever developed, the lesions became edematous and greatly activated and discharged pus more freely. On July 15, the intramuscular administration of colloidal copper (a foreign preparation) was begun, and ten injections of 5 cc. at biweekly intervals were given with noticeable improvement. On August 27, antimony and potassium tartrate was again administered in gradually increasing

Fig. 2.—Lichenoid papules resembling miliary lupus along the lower ribs; annular atrophic scars of the chest.

dosage from 1 to 5 cc. By the middle of September, the active lesions had undergone complete involution, leaving the peculiar, atrophic scars noted elsewhere. However, a biopsy of an apparently healed lesion still showed an occasional coccidioidal cyst within the giant cells in the nodular infiltrate in the upper layers of the corium. Shortly after this, a fresh eruption of discrete papules and vesicopustules was noted at the site of the old lesions. These rapidly enlarged, became

nodular, developed papillary projections bathed in pus and later coalesced to form extensive, crusted, verrucose lesions. In October, treatment was begun with a colloidal copper sulphide preparation of domestic make, in biweekly doses of 2 cc., both intravenously and by mouth. There was no noticeable improvement after six weeks of this therapy, and in December, injections of antimony and potassium tartrate were again started. Several injections of a mixed vaccine were given

Fig. 3.—Active crusted and papular lesions of the back with annular pigmented scars.

intravenously, with resulting constitutional reaction and rise of temperature to 102.6 F., without marked improvement in the condition. During the next three months, treatment was continued alternately with the original colloidal copper preparation and antimony and potassium tartrate, with slight improvement. In the meantime, the patient had lost a great deal of weight and strength. There were now enormous numbers of actively spreading vegetating and verrucose lesions,

many of them closely resembling blastomycosis. Miliary pustules were noted in the border of the patches, and it was possible at all times to demonstrate in smears numerous large coccidioidal cysts filled with several dozen small intracellular spores. At no time were subcutaneous lesions found, nor were the lymph glands enlarged. Repeated roentgen examinations of the lungs gave negative results.

Fig. 4.—Healed lesions after treatment with colloidal copper, antimony and potassium tartrate and roentgen rays.

The patient became discouraged, and at his own request was transferred to his home town, Omaha, and on May 2 he entered the Methodist Hospital under the care of Dr. Tomlinson. A letter received on May 16 stated that he had died on May 14, apparently after an overdose of codeine. Unfortunately, an autopsy was not obtained. According to Dr. Tomlinson's statement, the lesions had begun to

involute rapidly under daily doses of 5 cc. of antimony potassium tartrate, and at the time of his death appeared dry and reduced in size.

COMMENT

Portal of Entry and Source of Infection.—The history of this case strongly suggests the possibility of infection being of animal origin and the skin as the portal of entry through a scratch. It was Ophüls' original idea that the disease was primarily one of animals and that infection

Fig. 5.—Lesions in later stages resembling blastomycosis.

in human beings resulted from the inhalation of spores through the respiratory tract. This view has received confirmatory evidence by the recent demonstration of coccidioidal lesions in the upper respiratory tract and in the mediastinal lymph nodes of cattle and sheep slaughtered in certain parts of California. It appears probable, however, that the fungus may be saprophytic in earth and vegetable products and that the occupational factor in bringing workers in contact with the products of the soil is the important one. The skin as the portal of entry has been definitely proved in only a small percentage of the reported cases. In

Guy and Jacob's [11] case, a prick from a cactus thorn was the etiologic factor. Local injuries, cuts and trauma were noted by Evans and Ball [12] in nine of the fifty cases observed at the Los Angeles County Hospital up to 1916. On the other hand, Hammack and Lacey,[13] in a report of twenty-three cases in California, could in no case demonstrate positively

Fig. 6.—Distribution of lesions in the late stage; verrucose patches of the arms and neck.

11. Guy, W. H., and Jacob, F. M.: Granuloma Coccidioides, Arch. Dermat. & Syph. **16**:208 (Sept.) 1927.

12. Evans, N., and Ball, H. A.: Coccidioidal Granuloma: Analysis of Fifty Cases, J. A. M. A. **93**:1881 (Dec. 14) 1929.

13. Hammack, R. W., and Lacey, J. M.: California & West. Med. **22**:224, 1924.

the portal of entry of the infection, although the observations in some cases suggested that it was through the respiratory tract. In Tomlinson and Bancroft's [14] case, there was an accidental infection by inhalation in a laboratory worker. Jacobson mentioned insect bites as a possible factor.

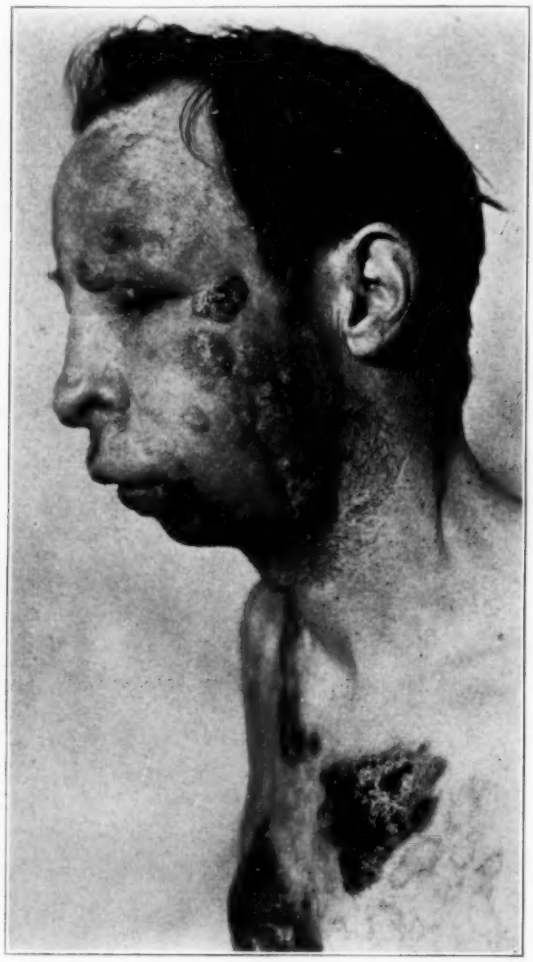

Fig. 7.—Distribution of lesions in the late stage; verrucose patches of the face and chest.

Types of Cutaneous Involvement.—Of the three recognized clinical types of infection by *Coccidioides,* the one involving the skin and subcu-

14. Tomlinson, C. C., and Bancroft, P.: Granuloma Coccidioides: Report of Case Responding Favorably to Antimony and Potassium Tartrate, J. A. M. A. **91**:947 (Sept. 29) 1928.

taneous tissues, the second the pulmonary tissues and the third the bones and joints, the rarest type is the pure dermic variety as represented by the case reported here. The features of interest are the unusual distribution and their polymorphism, crusted granulomatous and papillomatous nodules oozing pus, which have been likened by some observers to a rotten tomato, in combination with lichenoid papules resembling miliary lupus and annular, atrophic, pigmented scars similar to those seen in involuting patches of annular lichen planus. In the later stages of the disease the resemblance to blastomycosis is more striking, and a

Fig. 8.—Nodular infiltrate in the corium with changes in the epidermis (low power).

differentiation on clinical grounds would have been difficult. The absence of demonstrable subcutaneous, glandular, pulmonary or osseous involvement is a noteworthy feature, and it is for this reason that the designation chronic coccidioidal dermatitis seems appropriate. It is, however, probable that an autopsy would have revealed some evidence of systemic involvement. Subcutaneous lesions have been more frequently recorded in the literature. Jacobson mentioned flaccid tumors, abscesses and gummatous forms and a scrofulodermic type originating in the super-

ficial lymph glands. Hammack and Lacey and Evans and Ball found that cutaneous lesions were far less common than subcutaneous processes, which were either metastatic or secondary to a deeper seated suppuration. The chronicity of the dermic lesions has been frequently commented on. In the case reported here they had been present for two and one-half years with only short periods of remission. In Posados' case, they lasted seven years and in Rixford's first case, nine years. In many cases pulmonary lesions developed soon after the appearance of the lesions of the skin, indicating rapid dissemination and miliary spread.

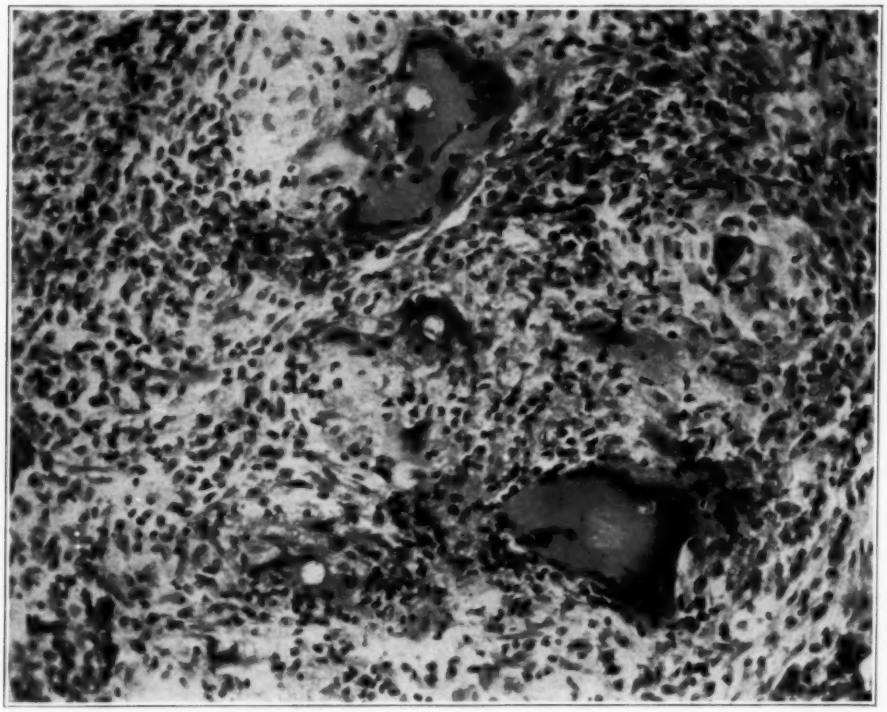

Fig. 9.—Higher magnification showing character of cells and several coccidioidal cysts within giant cells in one field.

Montgomery and Morrow [15] stated that in two instances the disease appeared to begin in the skin and remained localized in the skin for a long time, the patients living for years after infection. These same authors were the first to emphasize the points of differentiation, both clinical and laboratory, between infection due to *Coccidioides* and *Blastomyces*. There is at the present time no reason to doubt that the two are distinct diseases.

15. Montgomery and Morrow: J. Cutan. Dis. **22**:368, 1904.

Characteristics of the Fungus in Cultures and Smears.—The organism grown in our case conformed in its cultural characteristics to that reported for other strains of *Coccidioides immitis*. It grew readily on maltose agar and other mediums at room temperature. A white mold appeared within a few days. Later aerial hyphae developed, and the color subsequently changed to a light brown. Microscopically, there were found long, thick, branching and septate mycelia staining a deep blue with Giemsa stains and in older cultures showing unstained spores within the mycelia. A positive complement-fixation test with the

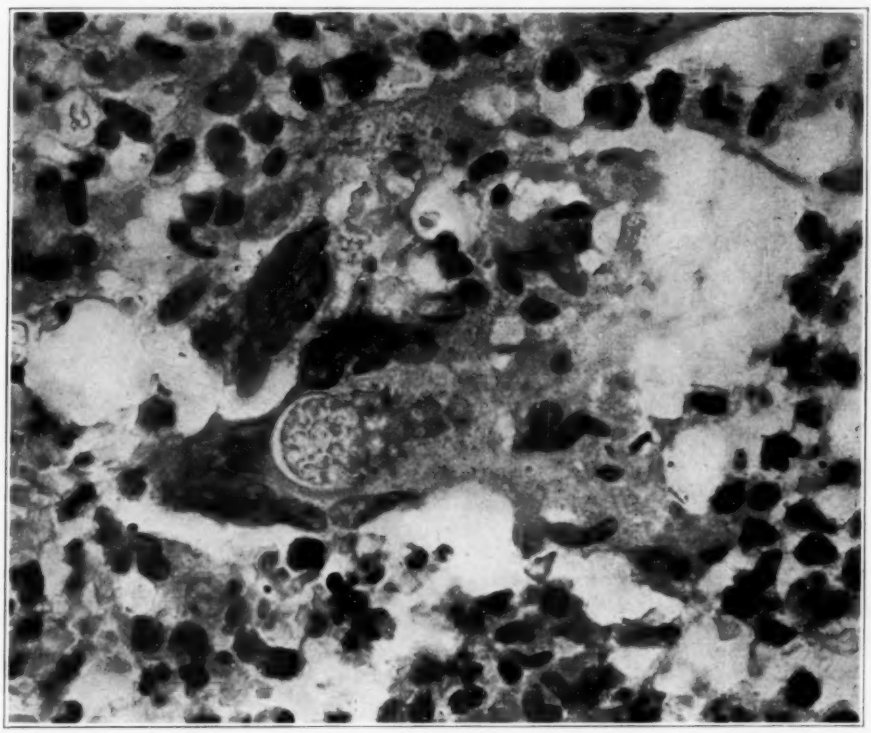

Fig. 10.—Giant cell containing a sporulating cyst with capsule ruptured at one end.

patient's serum was obtained in Dr. Jaffé's laboratory with 0.1 cc. of a four week old culture, sheep's blood being used as the amboceptor.

Smears from the pus from actively suppurating lesions examined in a dim light showed double contoured round bodies from 15 to 20 microns in diameter with a finely granular vacuolated protoplasm. According to observations made in Jaffé's laboratory, the protoplasm contains fat droplets which disappear with the ripening of the cyst. Fully matured cysts were also found which contained several dozen small round homo-

geneous spores as well as cysts which had ruptured at one end. Budding was never observed. The double cycle of growth was readily demonstrated by inoculations into animals, the mycelia becoming transformed into spore-containing cysts.

HISTOPATHOLOGIC OBSERVATIONS

The histologic changes were studied in numerous sections taken at various times in the course of the disease. The following interpretation

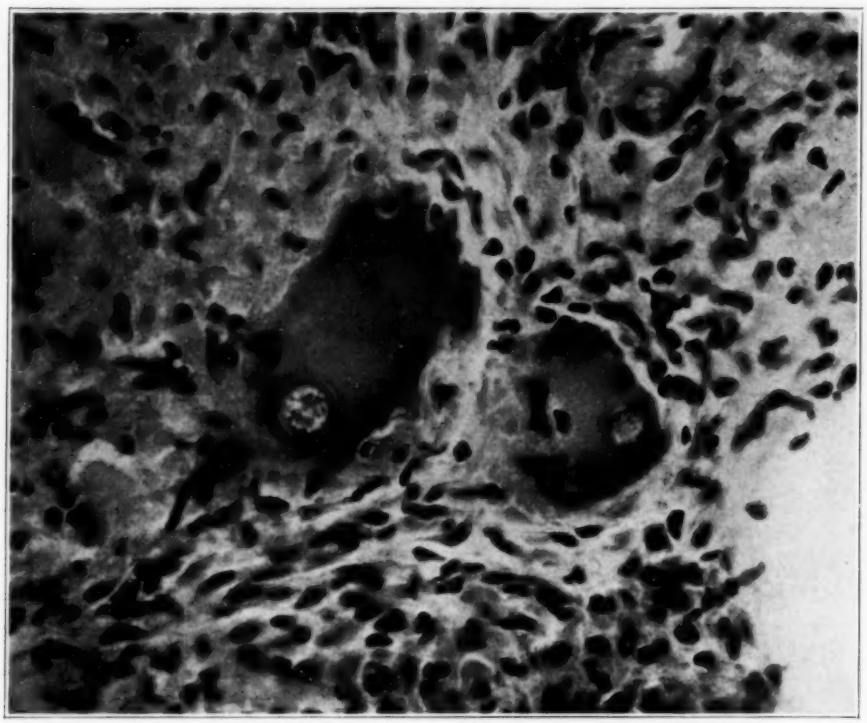

Fig. 11.—Giant cells containing cysts.

is by Dr. Jaffé [16] of the pathologic laboratory of the Cook County Hospital:

The earliest changes consist of small nodules surrounding the capillaries in the papillary layer and around the sweat and sebaceous glands. As the nodules enlarge they separate the collagenous and elastic fibers of the cutis. The nodules are composed of large delicate epithelioid cells and scattered lymphocytes which are more numerous at the periphery. In the center are one or more large multinucleated giant cells with processes anchored among the epithelioid cells. They contain numerous egg-shaped nuclei with small dense chromatin bodies and sur-

16. Jaffé: Virchows Arch. f. path. Anat. **278**:42, 1930.

round cysts 17 to 22 microns in diameter with a membrane 2 to 3 microns wide. With hematoxylin and eosin, the membrane is unstained. With Weigert's stain, it is deep violet like the elastic fibers, and with phosphotungstic acid hematoxylin a deep yellow. The interior of these bodies contains many crescentically arranged endospores almost unstained. The thick capsule ruptures at one end discharging the contents of the cyst, and the giant cell disintegrates. Regressive changes now take place in the center of the nodule. There is no caseation as in tuberculosis but an edematous, colliquative change with the development of foam cells from the epithelioid cells, which contain not lipoid but fluid droplets. Polymorphonuclear leukocytes invade the liquefied area and the interior of the nodule becomes

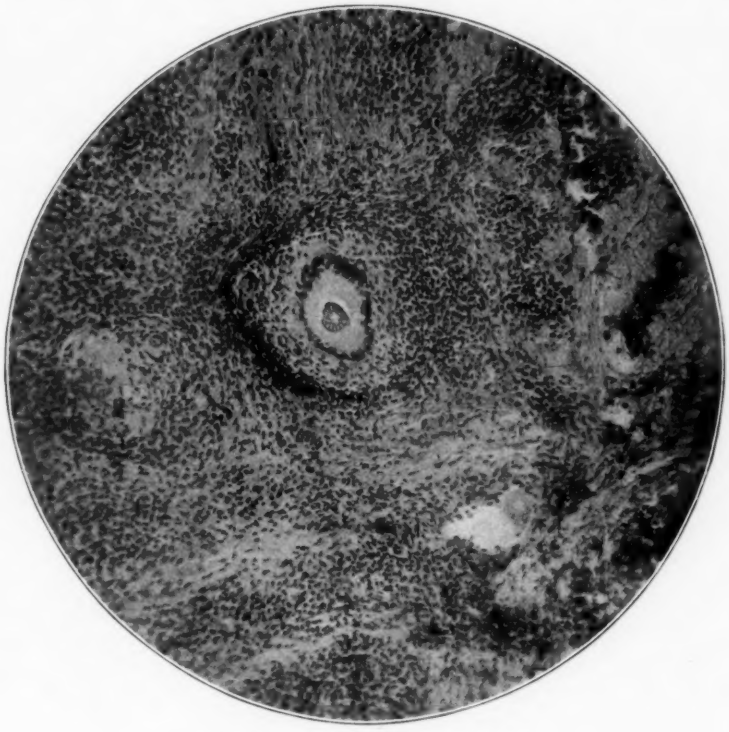

Fig. 12.—Segmental sporulation.

an abscess. The nodule is destroyed by a progressive suppuration. Growth takes place by apposition of new nodules with no tendency to coalescence. They are separated by dense masses of plasma cells. The epidermis proliferates and sends processes into the depths, the nodules breaking into the epithelial buds. The entire focus gradually suppurates and the epidermis is destroyed. After the discharge of pus, the process comes to a standstill and the pus dries out. A wall of plasma cells, lymphocytes and connective tissue separates the pus foci from the deeper layer of the cutis and subcutis. Under the thick crust the defect is filled with young scar tissue.

In addition to the foregoing observation, I noted in a biopsy of a lichenoid papule a moderate acanthosis with some edema, an infiltrate

composed of sharply defined nodules in the upper cutis surrounding the glands and blood vessels. Occasional giant cells were found enclosing immature, coccidioidal bodies surrounded by a granuloma of epithelioid cells, lymphocytes and a few plasma cells. Sections taken from the verrucose patches in the later stages show an enormous downgrowth of epidermal pegs, many intradermal abscesses in the acanthotic epidermis, a much larger number of actively sporulating mature cysts, many showing evidence of rupture at one end, and many nodular areas transformed

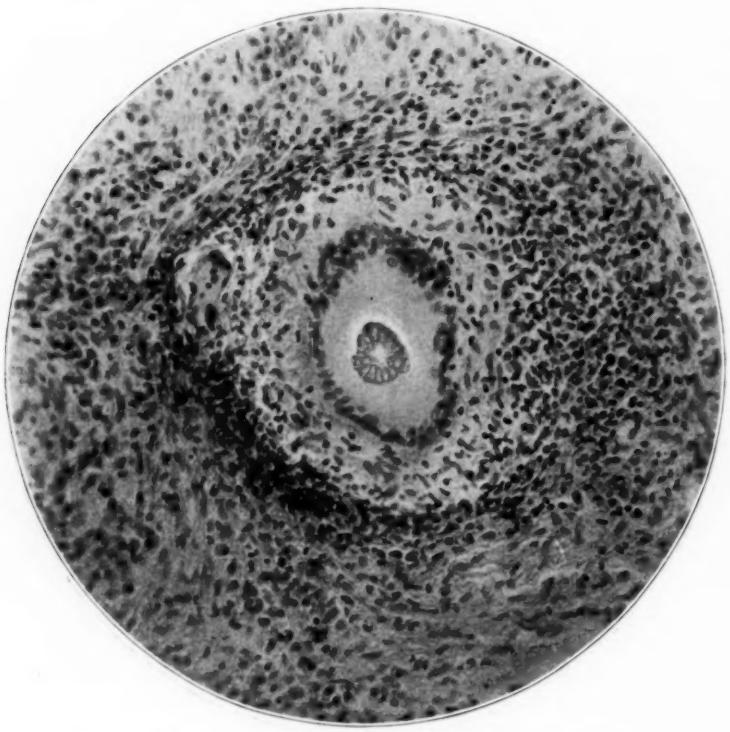

Fig. 13.—Segmental sporulation (higher magnification).

into abscesses containing numerous eosinophilic polymorphonuclears. Plasma cells are much more numerous. The observations made at this stage are similar to those of blastomycosis. The absence of caseation and the sharp demarcation of the nodules serve to differentiate from tuberculosis. Chipman and Templeton have recently commented on the absence of intra-epidermal abscesses in their case.

Another interesting feature was a peculiar type of endosporulation encountered in one section of a rapidly growing nodule. In most of the histologic specimens, from the human tissue and from experimental lesions in guinea-pigs, the fully matured coccidioidal cysts were found

within the giant cells or loose in the granulation tissue with numerous small spores disseminated uniformly throughout the body of the cyst. In one specimen it appeared in the much rarer form, of much larger size, approximately twice the diameter, with many less spores both relatively and absolutely, and with a clear, hyaline, central, spherical spore without any content which took the nuclear stain and a segmental peripheral distribution of the spores in a radial fashion. Dr. Emmet Rixford, who had an opportunity of seeing the slides, stated that he had been on the

Fig. 14.—Intra-epidermal abscess; plasm[illegible]cell infiltrate in late stage.

lookout for thirty-six years for an organism of this type which was found in one of the original cases of Dr. Rixford and his associates and which Dr. Stiles of Washington named *Coccidioides pyogenes* to contrast it with the more usual smaller form, *Coccidioides immitis*. Large numbers of these peculiar sporulating forms were found in their case in every section from the lesions of the skin, and the virulence of the process was evident from the rapidly fatal termination in six weeks with cutaneous and pulmonary involvement. As both types of endosporulation were found in the case reported here and the segmental form in only one slide, it is suggested that this may represent rather an unusual stage

in the process of cell division than a distinct species. In this connection, it may be mentioned that Dr. Weidman has sent some of the American strains of *Coccidioides* to Dr. Olympic da Fonseco of Oswaldo Cruz Institute, Rio de Janeiro, Brazil, on the basis of which the latter would separate the Brazilian and United States agents of the disease and suggests the name "*Coccidioides histo-porocellulare*" for the Brazilian strain. In the present state of knowledge, it would probably be unfortunate to create additional strains based on minor morphologic and cultural differences.

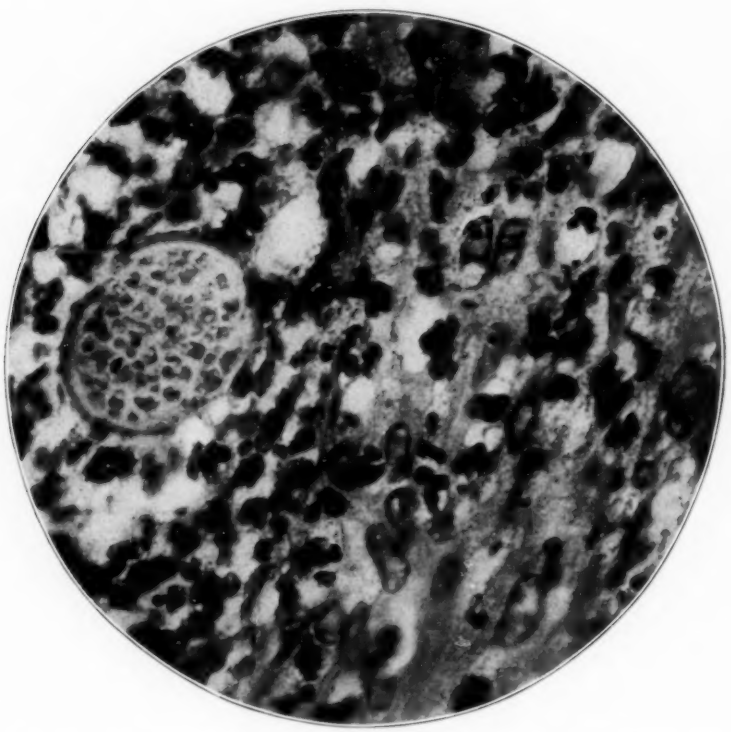

Fig. 15.—Endosporulation in the lymph node of an infected guinea-pig.

EXPERIMENTAL INOCULATION INTO ANIMALS

Male guinea-pigs were used to study the pathogenicity of the fungus and the course of the infection in animals. Subcutaneous and intraperitoneal inoculations of a four weeks' old maltose agar growth produced within ten days swelling of the inguinal lymph nodes, palpable subcutaneous masses in the abdomen and a suppurative orchitis. The animals became rapidly emaciated, and some died within four weeks. Autopsy showed nodules subcutaneously in the inguinal lymph nodes, testes, pancreas, spleen, lungs and around the large and small intestines. Grossly,

the nodules on section were found to be filled with a whitish, necrotic material resembling an abscess. Microscopically, when stained with hematoxylin and eosin, the nodules were found to be composed of foci of lymphocytes, endothelial cells, a few polymorphonuclears, with giant cells in the center. The giant cells were of the foreign body type, contained one or two double contoured parasites of small size, occasionally filled with numerous small evenly distributed endospores. Many parasites were encountered as double-contoured, ringlike structures not sur-

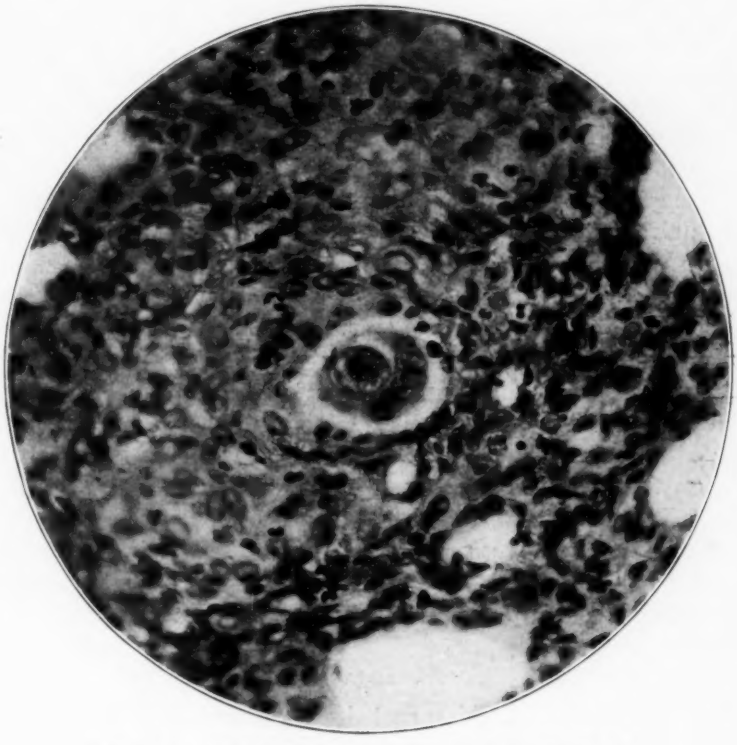

Fig. 16.—Nodule in the lung of infected guinea-pig.

rounded by giant cells but lying in the midst of endothelial cells and lymphocytes. The tubules of the testes were almost completely replaced by connective tissue, in part hyalinized, and by circumscribed nodules and abscesses with a fibrous capsule. In the pancreas and surrounding lymph nodes were found an abundance of immature cysts but no giant cells. The intestines were not involved, nor were there changes in the kidneys and liver except cloudy swelling. In the lungs were numerous miliary nodules with an occasional giant cell surrounding a parasite. One guinea-pig survived the injection, and after an initial loss of weight

showed improvement and apparent recovery, although masses could still be palpated subcutaneously. An intracutaneous test with a filtrate prepared by Dr. Howell of the Nelson Morris Research Institute gave negative results in this animal. Controls were also negative. Other observers, particularly Jacobson and D. J. Davis, have previously reported positive intracutaneous tests both in human beings and in animals into which experimental injections were made.

PROGNOSIS AND TREATMENT

The unfavorable prognosis and the temporary beneficial effects of therapy were illustrated by the outcome of the case reported here. Eighty-five per cent of the recorded cases have been fatal, and sooner or later dissemination and miliary spread throughout the body has been the termination. The prognosis appears to be best in the localized cutaneous form and the mono-articular type in which early amputation may effect a cure. The fulminating cases with pulmonary involvement are almost uniformly fatal. In view of the favorable effects reported by Jacobson with colloidal copper, and by Guy and Jacob with antimony and potassium tartrate, these drugs should be given to the limit of tolerance. It was my impression that colloidal copper was the more effective of the two agents in controlling the disease. Jacobson is particularly enthusiastic about the combined treatment with copper and a coccidioidin preparation containing the endotoxins and exotoxins of the organism. Other workers have tried colloidal lead, crystal violet, gentian violet, mercurochrome-220 soluble and other dyes unsuccessfully. Chipman and Templeton found that iodides gave them the best results, especially compound solution of iodine intravenously in doses of from 10 to 20 cc. No benefit was seen in this case from enormous doses of iodine by mouth. Further therapeutic studies are urgently needed.

SUMMARY

An unusual case of widespread dermic infection with *Coccidioides immitis* is described, presenting a combination of nodular, crusted, granulomatous lesions resembling mycosis fungoides, with lichenoid papules simulating miliary lupus and pigmented, atrophic, annular scars. In the later stages, the papillomatous and verrucose character of the eruption gave rise to a close clinical resemblance to blastomycosis. The chronic nature of the dermic lesions and the absence of demonstrable subcutaneous, glandular, pulmonary or osseous lesions suggests the term chronic, coccidioidal dermatitis as an appropriate one for this type of case. The skin as the portal of entry of the infection, and the possibility of animals being carriers of the disease is suggested by the history of the case. The temporarily favorable results of treatment with alternating courses of colloidal copper and antimony and potassium tartrate.

and roentgenotherapy, locally, are recorded. The histologic changes produced by the growth of *Coccidioides immitis* in the tissues in the form of nodules surrounding the blood vessels suggests dissemination by the blood stream. A peculiar type of segmental endosporulation is described which has only been observed once before, by Rixford and Gilchrist. The gross and histologic changes produced in experimentally infected guinea-pigs are described and the parallelism to human infection is noted.

30 North Michigan Avenue.

GENERALIZED SCLERODERMA IN CHILDREN

REPORT OF THREE CASES AND REVIEW OF THE LITERATURE *

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Although numerous cases of generalized scleroderma have been reported in the past, there have been comparatively few cases reported in which this condition occurred in children. For this reason, this report of three cases of the disease in young children is submitted.

REPORT OF CASES

CASE 1.—*History.*—A girl, aged 3 years and 2 months, was admitted to the Children's Hospital in Boston on May 3, 1923. The family history showed that the father and mother were both well; their first child had a congenital condition of the heart; the second was born prematurely and lived only three weeks, and the third child, the subject of this report, was born at full term with normal delivery. She was breast fed for three months. She did not do well on the bottle until albumin milk was given, when she began to have a normal gain in weight. A year previous to admission she had had bilateral otitis media, one ear discharging for one week, the other for three weeks. Since then she had been well up to five weeks before admission, when she developed a sore throat, a cough and a pathologic condition in the glands of the neck. During convalescence, about three weeks after the onset of the sore throat, a pebbly rash was noted on the forearms, and a few days later the skin all over the body was noticeably thickened. This condition was first evident on the face, but in three days it had involved the skin of the entire body. A gland in the left side of the neck, in which the swelling had subsided, became enlarged again.

Physical Examination.—The eyes were a little watery and there was a slight discharge from the nose. There was an enlarged gland in the left side of the neck, difficult to palpate accurately on account of the hard swelling of the skin. The teeth were in good condition. The heart, lungs and extremities showed no pathologic abnormalities. The skin showed some roughness on the arms, legs and buttocks, the roughness consisting of small, slightly elevated, pinkish papules, resembling "goose skin." There was marked firmness and thickening of the skin all over the body, but this was less noticeable on the feet than elsewhere. The skin seemed fixed to the underlying tissues; it could not be picked up. The fingers were slightly stiff from the thickening of the skin and there was a slight degree of sclerodactylia. The weight was 35 pounds (15.9 Kg.). The temperature was 98.6 F., the pulse rate, 90 and the respiratory rate, 20.

Laboratory Observations.—Urinalysis after a period of twenty-four hours showed: volume, 400 cc.; color, yellow, slightly cloudy; no albumin or sugar; no acetone or diacetic acid. The sediment showed an occasional red blood cell but no white cells or casts. The Wassermann reaction of the blood was negative. The

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* Read at the Fifty-Fourth Annual Meeting of the American Dermatological Association, Toronto, Canada, June, 1931.

blood sugar was 0.098 per hundred cubic centimeters. There was some difficulty in obtaining blood from the arm, as the veins seemed to be involved in the thickening of the skin. The examination of the blood showed 4,800,000 red cells and 10,000 white cells. The differential count of the white blood cells showed: polymorphonuclears, 38.5 per cent; transitional cells, 1.5 per cent; lymphocytes, 57 per cent; eosinophils, 2 per cent, and mast cells, 1 per cent. One normoblast was seen in a count of 200 cells. X-ray plates of the chest and arms showed no abnormalities.

Progress.—The patient did not seem to be suffering in any way and was bright and cheerful. The day after admission the child was taken home. One-fourth grain (0.16 mg.) of thyroid was given three times a day, but this treatment was continued for only a short time. Four months later there was but little change in the condition of the skin, though the child seemed otherwise to be perfectly well. During the following nine months the skin gradually cleared up, and the child has been well ever since.

CASE 2.—*History.*—A boy, aged 3 years and 8 months, was admitted to the Children's Hospital in Boston on May 21, 1930. The father was born in Italy and the mother in the United States; he was in good health, but she had frequent headaches. They were in poor circumstances and the child had recently been in the care of charitable agencies.

The past history showed that the child had been breast fed for seven months. He had been an active, healthy child except for pertussis when he was 1½ years old. Bilateral inguinal hernias had been successfully operated on six months later. The patient had had scarlet fever three months before admission. The mother stated that the skin had been somewhat thickened on the arms and legs for a year, but that this condition had grown much worse and had spread over the whole body since the boy had had scarlet fever.

Physical Examination.—The temperature was 99 F., the pulse rate, 100 and the respiratory rate, 22. The patient was a well developed and well nourished child, bright, alert, inquisitive, friendly and cooperative. He seemed to be in perfect health except for the pathologic condition of the skin. Examination showed that the heart, lungs and abdomen were entirely normal except for the scars from operation for bilateral hernias. There were slightly enlarged inguinal glands. The metabolic rate was + 18 on April 21 (Benedict method).

Laboratory Data.—Four examinations of the urine were all negative for albumin, sugar, acetone and diacetic acid. The specific gravity varied from 1.014 to 1.025. The sediment showed nothing abnormal. Examination of the blood on May 22 showed: red cells, 4,700,000; white cells, 10,500. The differential white count was as follows: polymorphonuclear cells, 58 per cent; lymphocytes, 26 per cent; large mononuclear cells, 10 per cent; eosinophils, 4 per cent; basophils, 2 per cent. The Wassermann reaction of the blood was negative. Tuberculin tests (intracutaneous injections of the dilutions 1:1,000, 1:500 and 1:100) were all negative.

The skin showed no eruption of any kind but was firm and indurated all over the body. This thickening was most marked on the face, in particular on the cheeks, but was also very distinct on the neck, the arms and the legs. The condition was least noticeable on the abdomen and thighs. A biopsy was performed, a piece of skin being taken from the calf of the leg. The patient was discharged from the hospital on June 7, with the condition of the skin unchanged. No medication was given.

Progress.—On August 28, there was marked improvement in the condition of the skin, and on November 10, it appeared absolutely normal with no suggestion of the previous condition.

CASE 3.—*History.*—A girl, aged 3 years and 2 months, was admitted to the Children's Hospital in Boston, Sept. 19, 1930. The parents were Americans and both were healthy, excepting that the father, a clam digger, had an occasional itching eruption on the arms which disappeared spontaneously. The patient was the only child, and there had been no other pregnancies.

The past history showed that the patient had been a full term infant, weighing 8 pounds (3.6 Kg.) at birth. She had been breast fed for six months. She had had eczema of the face and the scalp at intervals since birth. She had had measles in March, 1930, but had not been very ill. In July, 1929, the patient had been in a motor accident; she had been struck on the head, had remained unconscious for half an hour and had vomited blood. There had been no symptoms since that time.

In July, 1930, the mother noticed that the skin about the eyes was getting hard, so that the child had difficulty in getting her eyes wide open in the morning. This hardness spread down the neck and arms and finally over the whole body. Sweating did not seem to be diminished when the child was overheated. The family doctor was first consulted because the child was having difficulty in opening her mouth, on account of the hardness of the skin about the jaws. Her spirits were as good as usual and she did not appear ill.

Physical Examination.—A physical examination showed a well developed and well nourished child, talkative, good natured and unusually bright for her age. The face wore a fixed expression. The eyes were half open, the lips were parted and the skin was pulled tightly over bony prominences. The motions of the neck and of the jaw were distinctly limited. The skin was thick, taut and inelastic, especially over the face, the neck and the scalp, but this condition was well marked over the whole body. There were slight excoriations on the arms and the legs from scratching. The eyelids were so hard that they seemed almost immobile. The skin of the neck was so thick that palpation for cervical glands was unsatisfactory. Motion of the fingers was somewhat limited by the thickening of the skin. Sensation was normal; the reflexes were normal, and the pupils reacted to light and in accommodation. The physical examination otherwise gave negative results.

X-Ray Examination.—The x-ray picture showed considerable diffuse peribronchial infiltration. An x-ray picture of the skull, the abdomen and the extremities showed no evidence of calcification of the soft tissues.

Laboratory Examination.—On September 19, an examination of the blood showed: blood calcium, 0.0106 per hundred cubic centimeters; a negative Wassermann reaction; hemoglobin, 65 per cent; red cells, 4,210,000; white cells, 11,650. The tuberculin test (intracutaneous injection of a 1 : 1,000 solution) was negative. The urine was negative.

The temperature was slightly irregular while the patient was in the hospital. She was discharged on September 25. No medication was given.

Progress.—The child was next seen on November 10, when there was little or no change in the condition, but on Feb. 8, 1931, there was a marked improvement in the appearance. The eyes seemed to open nearly normally and the stiffness about the jaws was much less marked. On palpation, although the skin was still thickened and hard, the condition was much less noticeable than at the examination three months previously.

Of these three cases it will be noted that there has been complete recovery in two and marked improvement in the third. In case 1, thyroid extract was taken for a short time only, while in the other two cases none was given. If it had been given, these cases might have been recorded among those showing rapid improvement or complete recovery under treatment with thyroid extract. If these children had been getting worse while under observation, thyroid extract probably would have been given, but as they seemed in perfect health apart from their dermatosis, it was considered proper to await developments. Some may argue that recovery would have been more rapid with the use of thyroid.

REVIEW OF THE LITERATURE

Among the cases of generalized scleroderma in children that have been reported, in the 508 cases collected by Lewin and Heller [1] there were only 10 cases in children under 15 years of age. Osler [2] referred to a case reported by Marsh, in a child, aged 2, following diphtheria, with complete recovery in four months. Brayton,[3] in a discussion of a paper by Ravogli, mentioned a case in a girl, aged 9, following severe tonsillitis, with complete recovery in six months. Goodman [4] reported a case, very similar to that discussed by Brayton, in a girl, aged 9. Weidman [5] reported a congenital case that he believed to be true scleroderma, basing his belief on the postmortem microscopic picture. Smith and Sisson [6] reported a case in a girl, aged 4½, following vaccination, although their belief was that vaccination was not the cause of the trouble.

In the series of 103 cases of scleroderma reported by O'Leary and Nomland [7] there were 48 cases of generalized scleroderma, but none of them were in children, the youngest patient being 18 years old. Apert and Leblanc [8] reported a case in a boy, aged 14, which developed fol-

1. Lewin, G. R., and Heller, J.: Die Sclerodermie, Berlin, A. Hirschwald, 1895.

2. Osler, W.: On Diffuse Scleroderma with Special Reference to Diagnosis and to the Use of Thyroid Gland Extract, J. Cutan. Dis. **16**:49, 1898.

3. Brayton, in discussion on Ravogli: Rare Forms of Scleroderma, J. Cutan. Dis. **35**:9, 1917.

4. Goodman, H.: A Case of Scleroderma Diffusa in a Girl Nine Years of Age, J. Cutan. Dis. **36**:210, 1918.

5. Weidman, F. D.: Necropsy Findings in a Case of Congenital Scleroderma and Sclerodactylia, Arch. Dermat. & Syph. **1**:375 (April) 1920.

6. Smith, R. M., and Sisson, W. R.: A Case with Vascular, Joint, Muscular and Skin Disturbances of Uncertain Etiology, Am. J. Dis. Child. **16**:307 (Nov.) 1918.

7. O'Leary, P. A., and Nomland, R.: A Clinical Study of One Hundred and Three Cases of Scleroderma, Am. J. M. Sc. **180**:95, 1930.

8. Apert, E., and Leblanc: Sclérodermie oedémateuse généralisé. (Survenue rapidement à la suite d'un adenophlegmon du cou), Bull. Soc. de pédiat. de Paris **13**:445, 1911.

lowing an infected gland in the neck. Improvement resulted after treatment with thyroid extract. Batten [9] reported a case of generalized scleroderma associated with dermatomyositis in a child, which ended fatally after fifteen years. Kennedy [10] reported a case with calcinosis in a child, aged 6.

Etiology.—In regard to the etiology of scleroderma, prominent in the literature is reference to the glands of internal secretion and of the sympathetic nervous system.

Hypofunction, hyperfunction or dysfunction of almost every one of the ductless glands has been mentioned in connection with scleroderma. Strunz [11] described a case in a child with a deficiency of the pituitary gland. The disease began when the child was 4½ months old. Struempell [12] reported a case in a dwarf with changes in the pituitary gland. Sequeira [13] reported four cases associated with disease of the thyroid gland. Hektoen and Wells [14] reported a case of diffuse scleroderma with atrophic thyroid gland.

Pigmentation suggesting Addison's disease is not uncommon in scleroderma. Some pigmentation occurred in 144 of the 508 cases collected by Lewin and Heller. Osler believed that pigmentation is due to a tropic change and not due to suprarenal disease. Longcope,[15] however, reported a fatal case of scleroderma with pigmentation, which showed at autopsy atrophy of one suprarenal gland.

Among the cases reported by O'Leary and Nomland, in none of the forty-eight cases of generalized scleroderma was the basal metabolic rate below normal, while in seventeen cases it was + 10 or more, and in seven there was either hyperthyroidism or adenomatous goiter.

Of the 111 cases of dermatoses that occurred in association with exophthalmic goiter studied by Hyde and McEwen,[16] there were 5 cases

9. Batten, E.: A Case of Dermatomyositis in a Child, Brit. J. Child. Dis. **9**: 247, 1912.

10. Kennedy, R. L. J.: Calcinosis and Scleroderma in a Child Treated by Ketogenic Diet, M. Clin. North America **12**:1655, 1929.

11. Strunz, F.: Ein Fall von Progeria beginnend mit ausgedehnter Sklerodermie, Ztschr. f. Kinderh. **47**:401, 1929.

12. Struempell, A.: Ein Beitrag zur Pathologie und pathologischen Anatomie der Acromegalie, Deutsche Ztschr. f. Nervenh. **11**:51, 1897.

13. Sequeira, J. H.: Four Cases of Sclerodema Associated with Disease of the Thyroid Gland, Brit. J. Dermat. **28**:31, 1916.

14. Hektoen, L., and Wells, H. G.: Diffuse Scleroderma Associated with Chronic Fibrous Changes in the Thyroid, J. A. M. A. **28**:1240 (June 26) 1897.

15. Longcope, W. T.: Hypoglycemia in Scleroderma: Metabolism in Eight Cases with Reference to Function of Glands of Internal Secretion, J. A. M. A. **90**:1 (Jan. 7) 1928.

16. Hyde, J. N., and McEwen, E. L.: The Dermatoses Occurring in Exophthalmic Goitre, Am. J. M. Sc. **125**:1000, 1903.

of generalized scleroderma. Castle,[17] Hoffmann,[18] Foerster,[19] Struempell [12] and Weiss [20] have all written papers in reference to the endocrine relationship to scleroderma.

Foerster makes the following statement:

> The successful therapeutic use of thyroid extract in scleroderma as reported by a number of observers, has been offered as aetiological evidence in this connection, but these reports are more than counter-balanced by accounts of its unsuccessful employment.

The association of scleroderma with some underlying disturbance in the vegetative nervous system is strongly indicated in those cases of sclerodactylia that also show Raynaud's phenomena, which is generally conceded to be associated in some way with the sympathetic nervous system. Further support for this theory is furnished by the brilliant results obtained in such cases by sympathetic ganglionectomy, as reported by Adson and Brown.[21] Relief in six cases of Raynaud's disease of the feet was complete and permanent. In five cases of Raynaud's disease of the hands, the patients have been under postoperative observation for periods of from two months to four years. The results have been remarkably good.

In a case of Raynaud's disease in a young woman who has been under my observation, sympathetic ganglionectomy performed by Dr. J. C. White at the Massachusetts General Hospital resulted immediately in complete relief from pain and discomfort. This improvement has been maintained during the six months that have elapsed since operation.

In regard to the immediate possible causative factors in generalized scleroderma, almost every common infection has been mentioned. Of these, rheumatic infections evidenced by pain and swelling in the joints are perhaps the most usual. In 58 per cent of the generalized cases in the series reported by O'Leary and Nomland, such symptoms occurred. Six cases were preceded by acute general infections: influenza in three cases, tonsillitis in two cases and erysipelas in one case. Two patients had syphilis. This is not considered a higher incidence than in other

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17. Castle, W. F.: The Endocrine Causation of Scleroderma, Including Morphea, Brit. J. Dermat. **35**:225 and 303, 1923.

18. Hoffmann, H.: Untersuchungen über endokrine Störungen bei Hautkrankheiten, insebesondere Sklerodermie und Akrodermatitis, Acta dermat.-venereol. **6**: 423, 1925.

19. Foerster, O. H.: Relation of Internal Secretions to Cutaneous Diseases, J. Cutan. Dis. **34**:1, 1916.

20. Weiss, L.: Scleroderma Treated by Endocrins, Arch. Dermat. & Syph. **1**:460 (April) 1920.

21. Adson, A. W., and Brown, G. E.: Thoracic and Lumbar Sympathetic Ganglionectomy in Peripheral Vascular Diseases, J. A. M. A. **94**:250 (Jan. 25) 1930.

diseases. A case following diphtheria in a child, aged 2, was mentioned by Osler as having been reported by Marsh. There was complete recovery in four months. A case following tonsillitis was reported by Goodman in a girl, aged 9. Brayton, in a discussion of a paper presented by Ravogli, mentioned a similar case in a patient of the same age. Some cases have followed what seemed to be ordinary "colds." Two of the cases in children, collected by Lewin and Heller, began in this way. Acute cervical adenopathy has preceded generalized scleroderma in some instances. Apert and Leblanc reported a case in a boy, aged 14, immediately following an acute glandular swelling in the neck.

Syphilis in association with scleroderma has been recorded by Murray-Will.[22] Boardman [23] reported a generalized case associated with syphilis, showing marked improvement following antisyphilitic treatment. Whitehouse [24] reported several cases in which syphilis may have been a factor of importance. Audry and Chatellier [25] likewise have written on the association of scleroderma and syphilis. Lortat-Jacob, Legrain and Baudoin [26] also presented a case of generalized scleroderma of syphilitic origin with improvement following the administration of neoarsphenamine.

Arsenic has been suggested as a possible etiologic factor in scleroderma by Ayres [27] who has reported several cases in which arsenic was found in the urine.

Brissaud [28] believed that all forms of scleroderma have their origin in the sympathetic nervous system.

Exposure to cold has also been mentioned as preceding generalized scleroderma, as in Thirial's case, described in 1845 and mentioned by Lewin and Heller. A girl, aged 15, after washing some clothing in cold water, developed amenorrhea, followed almost immediately by generalized scleroderma. Cases are also reported in which there are no apparent preceding constitutional disturbances.

If one is to judge by the literature, one must believe that almost any severe infection may bring about the onset of generalized scleroderma.

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22. Murray-Will, E.: Scleroderma and Syphilis, Brit. J. Dermat. **39**:201, 1927.

23. Boardman, W. P.: Scleroderma, with Special Reference to Its Etiology and Treatment, Arch. Dermat. & Syph. **19**:901 (June) 1929.

24. Whitehouse, H. H.: Some Observations on the Results of the Wassermann Test in Scleroderma, J. Cutan. Dis. **27**:535, 1909.

25. Audry, C., and Chatellier, L.: Sclérème des adultes et syphilis, Ann. de dermat. et syph. **4**:1, 1923.

26. Lortat-Jacob, L.; Legrain, P., and Baudoin, E.: Sclérodermie généralisée d'origine syphilitique, Bull. Soc. franç. de dermat. et syph. **30**:398, 1923.

27. Ayres, S.: Scleroderma as a Possible Manifestation of Chronic Arsenic Poisoning, Arch. Dermat. & Syph. **2**:747 (Dec.) 1920.

28. Brissaud, E.: Pathogénie du processus sclérodermique, Presse méd. **51**: 285, 1897.

It is most probable, however, that such infections act, so to speak, only as the spark that starts the conflagration and that other factors must be present to furnish the inflammable material ready to be ignited by the spark. It may be that the sympathetic nervous system does not function properly on account of the lack of some endocrine substance or it may be just the reverse, that is, that the endocrine system is unbalanced on account of some abnormal variation in the impulses sent out by the sympathetic nervous system.

Hoffmann believed that sufferers from diffuse scleroderma have unstable vegetative constitutions. He based this theory on the lack of general reaction to epinephrine in thirteen cases of diffuse scleroderma and a lack of rise in the sugar curve after the administration of this drug. Controls in normal persons rarely acted in this manner. He believed, as most physicians do, that there is a very close interrelation between the endocrine glands and the vegetative nervous system. He believed that diffuse scleroderma may develop from shock, cold, trauma, syphilis or other infections only in those who have an abnormal neuro-endocrinologic mechanism.

Michael,[29] in the discussion of Seale's paper, expressed approval of Hoffmann's theories and felt that this is the best hypothesis in our present state of knowledge. I agree with this opinion.

In short, it seems that little progress, if any, has been made in our knowledge of the cause of this condition. Osler's summing up of the theories still seems to be up-to-date:

> We know nothing of the essential causes, and the data are not yet at hand upon which a satisfactory theory can be based. The disease is variously regarded as a trophoneurosis dependent upon changes in the nervous system; a perversion of nutrition analogous to myxedema and due to disturbance of the thyroid function; a sclerosis following widespread endarteritis; a primary, slow hyperplasia of the collagenous intercellular substance of the corium—fibromatosis; or a primary affection of the lymph channels, central or peripheral. The first named view, the one most generally held, may well serve as a working hypothesis.

The number of cases of calcinosis occurring in scleroderma leads one to believe that the occurrence of these conditions in the same patient cannot be merely coincidental. Among those reporting such cases are Pollitzer,[30] Williams [31] and Langmead.[32] In Pollitzer's case, which was

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29. Michael, in discussion on Seale: Endocrine Aspects of Sclerodema: Report of a Case with Glandular Dysfunction, South. M. J. **22**:285, 1929.

30. Pollitzer, S.: Ossification in a Case of Scleroderma, J. Cutan. Dis. **36**:271, 1918.

31. Williams, C. M.: A Case of Diffuse Scleroderma Presenting Unusual Features, Arch. Dermat. & Syph. **9**:187 (Feb.) 1924.

32. Langmead, F. S.: The Relationship Between Certain Rare Diseases: Generalized Scleroderma, Calcinosis, Dermatomyositis, Myositis Fibrosa, Arch. Pediat. **40**:112, 1923.

one of the localized forms of scleroderma, there was an actual formation of bone which was removed from the cheek.

Thibierge and Weissenbach,[33] in 1911, collected nine cases of calcium deposits in association with scleroderma. Durham [34] collected fourteen such cases.

Why calcium deposits should occur so often in scleroderma is not known. Whether this occurrence is analogous to the deposits of calcium salts in tuberculosis and cancer or whether it may be due to some alteration in the distribution of calcium in the tissues that is specifically associated with scleroderma, we do not know, but it is probable that calcium is deposited only in tissues that have undergone degenerative changes.

Langmead believed that calcinosis, generalized scleroderma, dermatomyositis and myositis fibrosa are all manifestations of an underlying single morbid process. Maloney and Bloom [35] referred to the relatively large number of cases of calcinosis occurring in scleroderma and sclerodactylia.

In Williams' case there were atrophic changes in the bones, suggesting that calcium was being taken from the bones and deposited in the soft tissues. In this case, which began in childhood, there was progressive calcification in both patellar ligaments and in the left achilles tendon. Reference has already been made to Kennedy's case of calcinosis associated with scleroderma. Pautrier and Zorn [36] have also contributed to this subject. Their observations seem to show that there is a slight rise in the calcium content of the blood in these cases.

Prognosis.—Generalized scleroderma occurring in children seems to have a much brighter outlook as to prognosis than it does in adults. The majority of the patients whose cases have been reported have recovered. In most of the cases in which the patients recovered there has not been an edematous stage and there has been little or no evidence of atrophy, as in the case reported by Goodman and in the cases reported in this paper.

Lieberthal [37] stated that recovery seems to be the rule in generalized scleroderma of infancy and childhood. Radcliffe-Crocker [38] stated that

33. Thibierge, G., and Weissenbach, A. J.: Concrétions calcaires sous-cutanées et sclérodermie, Ann. de dermat. et syph. **2**:129, 1911.

34. Durham, R. H.: Scleroderma and Calcinosis, Arch. Int. Med. **42**:467 (Oct.) 1928.

35. Maloney, E. R., and Bloom, D.: Cutaneous Calcinosis: Report of a Case, Arch. Dermat. & Syph. **23**:245 (Feb.) 1931.

36. Pautrier, L. M., and Zorn: La calcémie dans les atrophies cutanées et dans les sclérodermies, Bull. Soc. franç de dermat. et syph. **36**:991, 1929.

37. Lieberthal, D.: Scleroma Neonatorum and Scleroderma, J. Cutan. Dis. **36**:29, 1918.

38. Radcliffe-Crocker: Diseases of the Skin, ed. 3, Philadelphia, P. Blakiston's Son & Co., 1910, p. 622.

the cases in which the skin is indurated from the first are more favorable than those in which it is edematous, as such cases are less likely to become atrophic. In the cases in which marked atrophy has already taken place, the prospects for recovery are not as favorable, as this condition is usually progressive. Radcliffe-Crocker believed that the prognosis in children is good as a rule.

Treatment.—It is questionable whether there is any specific treatment for generalized scleroderma.

It may be well to give thyroid extract a trial as a number of instances are recorded of improvement under treatment with this extract, but whether these patients might not have done as well without it is a question. Extracts of the pituitary and suprarenal glands have also been used with apparent success.

If there is any evidence of lack of thyroid, it is reasonable to suppose that improvement may occur from treatment with thyroid extract. However, a number of cases have been recorded in which hyperthyroidism was present, and in such cases there is no reason to suppose that benefit would have been derived from the administration of thyroid extract.

Osler was not impressed by the action of thyroid medication in diffuse scleroderma, nor was Radcliffe-Crocker, who referred to the success of thyroid medication as very meager.

Patients with generalized scleroderma should be guarded against cold to which they are often supersensitive. Proper feeding and hygiene are important in keeping them in the best possible general condition. In most cases, massage has a favorable influence by helping the circulation and by its aid in preventing loss of mobility; in fact, massage will often restore a considerable degree of mobility where this in part has been lost.

In cases in which great discomfort is associated with Raynaud's phenomena, the question of sympathetic ganglionectomy should be considered. Removal of the patient to a warm climate is often advantageous.

A histopathologic examination of the skin excised in case 2 of this report was made by Dr. S. Burt Wolbach, Shattuck Professor of Pathological Anatomy, Harvard Medical School, whose impressions were as follows:

> The outstanding things in this specimen were, first, the presence of the nontypical collagen which was more refractive in appearance and stained more deeply than in normal skin. I am rather certain this change is like that which occurs in exposure to x-rays and is produced by swelling and coalescence of fibrils. The elastic tissue stains showed a great irregularity in the size and distribution of the fibers, and in many places marked fragmentation and clumping. These are well illustrated by the photomicrographs. Perhaps in consequence of these changes, the papillae are less conspicuous than in normal skin, and I am quite certain that

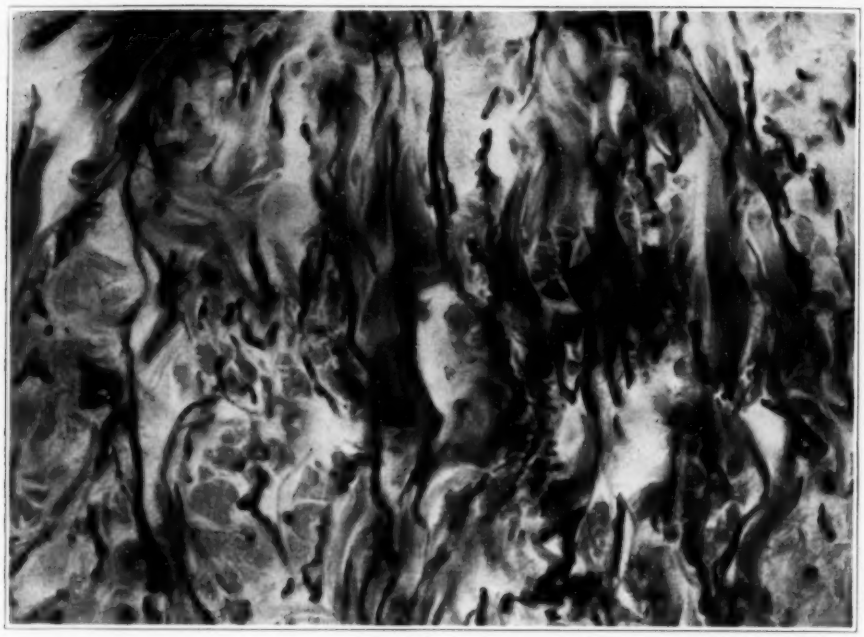

Fig. 1.—Variation in the density of the collagen with coalescence and hyalinization of the fibrils. The elastic fibers show some clumping and fragmentation. Weigert's elastic tissue stain; reduced from a magnification of 700 diameters.

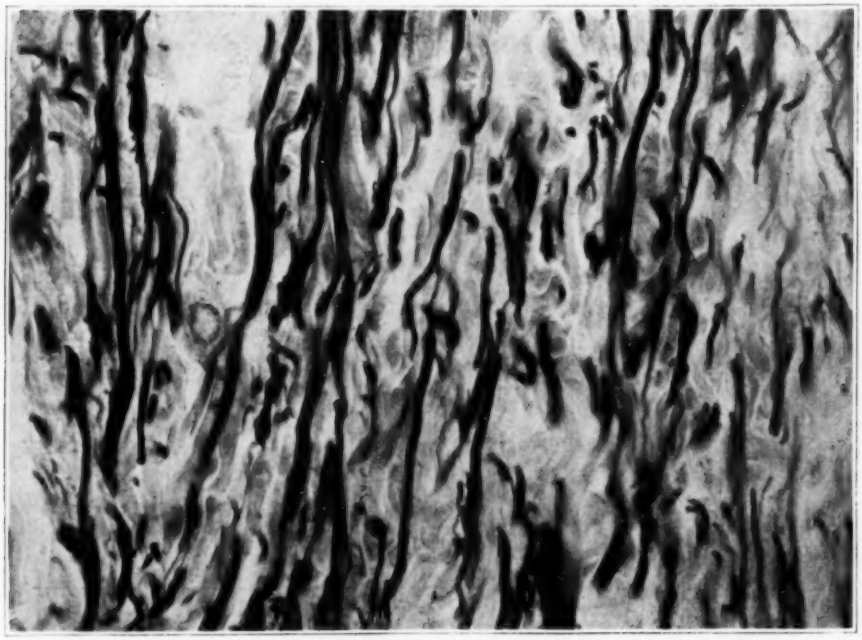

Fig. 2.—The normal skin of a child, aged 2. Weigert's elastic tissue stain; reduced from a magnification of 700 diameters.

Fig. 3.—Another specimen of normal skin of a child, aged 12. Weigert's elastic tissue stain; reduced from a magnification of 700 diameters.

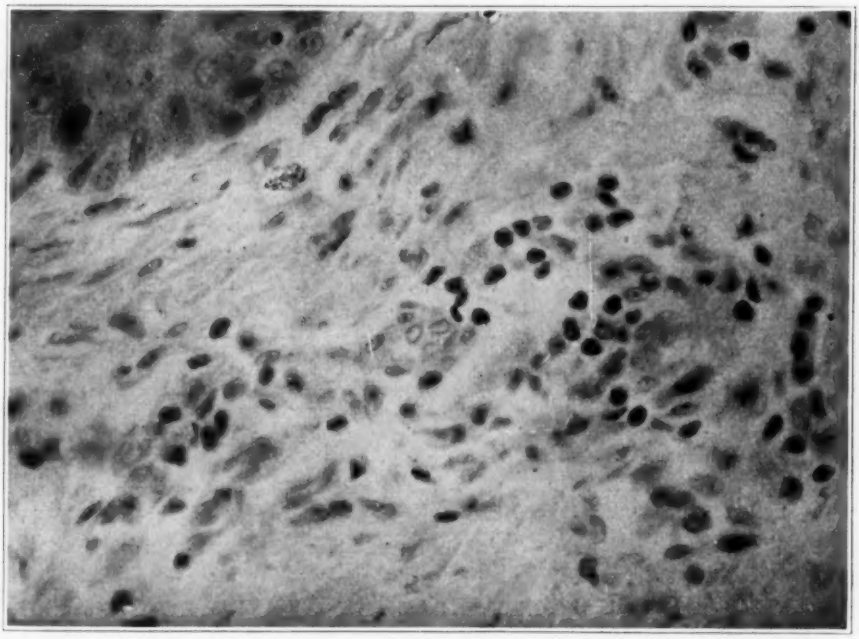

Fig. 4.—Perivascular infiltration in the corium, in the region of the subpapillary plexus. Eosin methylene blue; reduced from a magnification of 700 diameters.

in some locations there had been a new formation of collagen around the capillaries of the papillae and the flattening out or obliteration of other papillae. There was also considerable perivascular infiltration around the blood vessels in the subpapillary plexus. The cells consisted of lymphoid cells, rare plasma cells, eosinophils and an occasional mononuclear cell, probably derived from the adventitia. These perivascular infiltrations were on the whole loose textured, and I am inclined to think that they appeared so because of a slight edema, particularly as one can occasionally find dilated lymphatics of small size containing mononuclear cells. These mononuclear cells had the appearance of macrophages. There were also zones of more marked perivascular infiltration deeper in the corium adjacent to the hair shafts, and occasionally migrating cells could be seen. Here again the appearances were those of edema as well as infiltration, and I think that some of the cells were

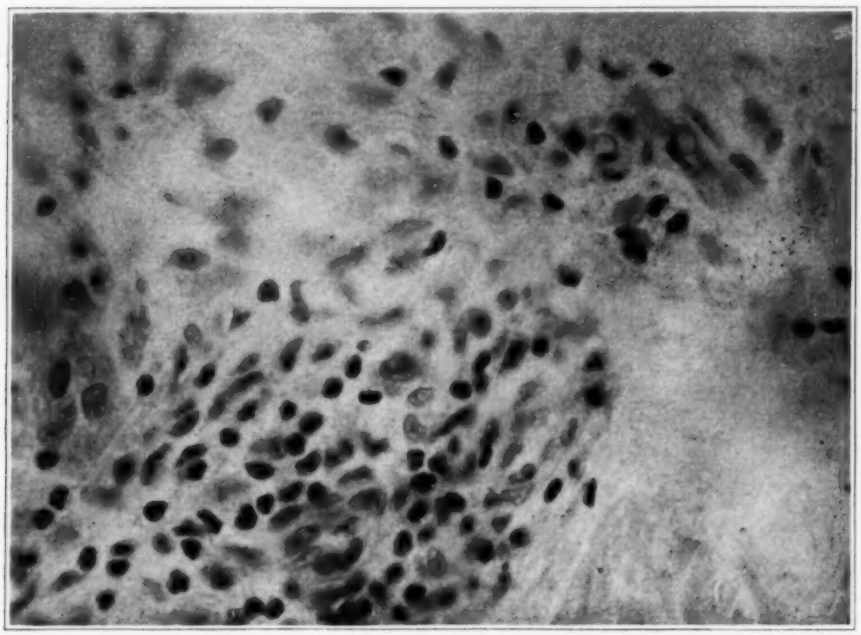

Fig. 5.—Perivascular infiltration deeper in the corium than that shown in figure 4, but adjacent to the hair shaft, showing also rarefication of the collagen and vacuolated cells in the upper right hand corner of the microscopic field. Eosin methylene blue; reduced from a magnification of 700 diameters.

fibroblasts that had been recently formed in response to a proliferative stimulus. There were also numerous vacuolated cells in these regions which are illustrated in one of the photomicrographs. I saw nothing distinctive in the character of the perivascular infiltration. I have made no attempt to describe minor changes in the epidermis, although perhaps I should mention that there were occasionally cells that appeared to be migrating into the epidermis from the corium. I think that on the whole, it is best to interpret the cellular reactions as secondary to the changes in the collagen and elastic tissue.

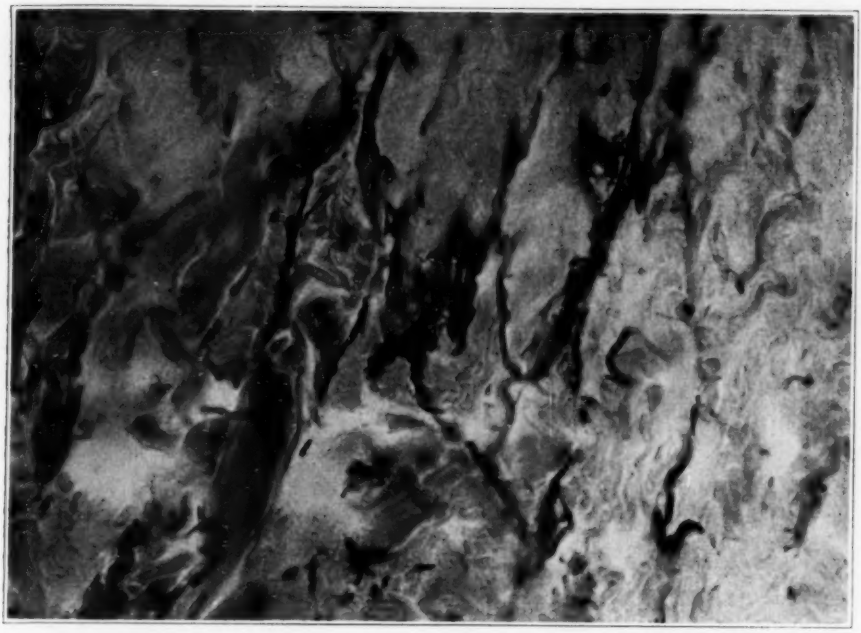

Fig. 6.—Variation in the density of the collagen bundles and the changes in distribution and continuity of the elastic fibers. Weigert's elastic tissue stain; reduced from a magnification of 700 diameters.

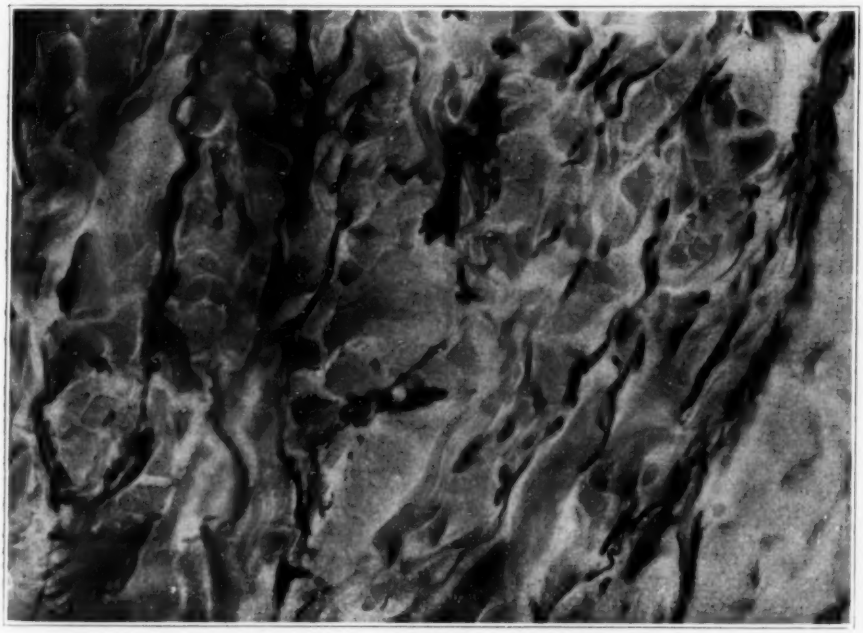

Fig. 7.—Another field. Weigert's elastic tissue stain; reduced from a magnification of 700 diameters.

As Wolbach [39] has made a special histologic study of dermatoses resulting from the use of x-rays, I feel that the histologic similarity that he notes between such cases and this specimen is of considerable interest.

SUMMARY

1. A report of three cases of generalized scleroderma in young children is presented.
2. A review of the literature is given.
3. It is concluded that the prognosis as a rule is favorable in children.
4. A pathologic report on skin from the calf of the leg is presented.

ABSTRACT OF DISCUSSION

Dr. Howard Fox, New York: In generalized scleroderma in children two points are of special interest, namely, the incidence and severity. The disease is undoubtedly rare in children, even though Dr. Oliver has had the good fortune to observe three such cases. In looking over the records of about 5,800 cases of miscellaneous diseases at the Nursery and Child's Hospital, only one case of scleroderma was found. This case occurred in an infant, and biopsy was not performed; without this help, I think, the condition could not possibly be differentiated from sclerema. The records of about 75,000 skin diseases at the University and Bellevue Clinic contained only one case of scleroderma in a child, a boy, aged 14. The disease was of the progressive type and had been present since infancy. As to the severity of generalized scleroderma, all will agree, I think, that it usually runs a milder course in children than in adults.

Dr. W. H. Goeckerman, Rochester, Minn.: There is apparently a group of generalized sclerodermas seen in both children and adults, which follow directly various infections. In this group the prognosis is very good as contrasted to the ordinary forms of scleroderma. It is likely that the cutaneous changes will involute spontaneously, but I feel that the reparative process can be accelerated by the injection of foreign proteins quite in contrast to the common type of scleroderma.

Dr. Fred D. Weidman, Philadelphia: Dr. Oliver has referred to a 15 day old infant on whom I performed a postmortem examination (incidentally, the "scleroderma" extended down even into the muscle fibers), and the particular point of interest was that the child had definite involvement of the cerebrospinal nervous system. There was frank, apparently acute involvement of the meninges, and as far as we could judge, a marked degeneration of the anterior horn cells. That was one phase of the examination. The second phase was the fibroses, which had been responsible for the clinical phenomena of sclerosis. There was yet a third phase in the way of calcinosis, which Dr. Oliver touched on.

The intriguing thing was the pathogenesis, and as we interpreted it, it was certain that the fibrosing changes must have occurred in utero. They were so extreme that they must have been months in duration.

The final conclusion we arrived at was that there was a nervous fault that was responsible for rigors of muscles leading to spasms, perhaps leading to faulty development of tissues in which the muscle tissue atrophied, resulting in fibrosis.

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39. Wolbach, S. B.: A Summary of the Effects of Repeated Roentgen-Ray Exposures upon the Human Skin, Antecedent to the Formation of Carcinoma, Am. J. Roentgenol. **13**:139, 1925.

The calcinosis must not be overlooked, for there may well be an element in the complex affecting the nervous tissue and also the endocrine system, the endocrine theory being particularly attractive in connection with the changes we found (thymus for instance).

In this same connection, occasionally we see cases of scleroderma in adults in which there is Buerger's disease to account for the fibrosis.

DR. CHARLES M. WILLIAMS, New York: The prognosis is mentioned as being usually better in infancy than in adults. I wish to record that the patient whose case I reported some years ago died two or three years after I saw her.

DR. SAMUEL AYRES, JR., Los Angeles: Since Dr. Oliver mentioned the point of arsenic, I regret that the test was not performed in these cases. It has been of considerable interest to me in that I reported a series of cases in adults some years ago, in which arsenic was found in the urine. I have not had an opportunity to examine for arsenic in the urine of children, but in adult scleroderma it seems there is an etiologic relationship, at least in some cases. Undoubtedly it is of multiple origin, but it seems that arsenic acting on the nervous and endocrine systems is sufficient to produce the changes found. One patient had been under treatment for anemia with arsenic, during which time the sclerodermatous condition developed. The condition improved under the administration of sodium thiosulphate. Another patient developed scleroderma during treatment with acetarsone for intestinal amebas. The patient died soon afterward.

I feel that the question has not been definitely settled and believe arsenic should be looked for.

DR. EARL D. OSBORNE, Buffalo: I wish to call attention to a case of scleroderma associated with hemiatrophy which was reported in the English literature. For some reason or other this interesting and instructive case has been largely overlooked in recent reviews of the literature. I reviewed it in detail in a paper that I wrote on, "Morphea Association with Hemiatrophy of the Face," about nine years ago. Stephen reported this case in detail in the *British Dermatological Journal* in 1886. The patient was a young girl, aged 14, whom he observed for a period of twelve years; the patient finally came to autopsy, and the detail observations are given in the original article. This girl, when first seen by Stephen, had a right-sided hemiatrophy of the face, body and extremities. There was a marked scleroderma of the right side, and subsequently a number of patches appeared on the left side. At autopsy, the brain showed a thinning of the motor area on the left side. The spinal cord showed, on the right side, a degeneration of the anterior horn cells and the posterior nerve root ganglion cells. The nerve fibers of the cervical and lumbar plexuses showed well marked parenchymatous degeneration. Stephen concluded that scleroderma was a trophoneurosis due to changes in the trophic cells of the central nervous system with secondary vascular changes in the cord, skin and muscle. It is interesting to note that Weidman has called attention to degeneration of anterior horn cells in scleroderma. It is unfortunate that more careful pathologic studies have not been made on the central nervous system of patients dying with scleroderma and morphea. These observations are of special importance in considering the therapeutic effects of foreign protein therapy and ganglionectomy in this group of diseases as well as in Buerger's disease. It is also of interest in view of the cases reported by Dr. Harry Foerster of the beneficial effect of deep radiation therapy to the posterior nerve roots.

DR. CHARLES C. DENNIE, Kansas City, Mo.: In regard to the treatment mentioned concerning universal scleroderma in children, I may state that I have had

two patients in the past two years both of whom were treated with typhoid vaccine intravenously and with contrast baths. One of these children has recovered so far as we can see, but the other child died from diphtheria during the treatment.

So far as ganglionectomy is concerned in the treatment of these patients, its value has not been entirely established. I think Dr. Goeckerman will remember a case in which a ganglionectomy was done after the disease was well developed, and for one year the effect was remarkable; then the disease recurred with marked severity. Whether this was due to the fact that all of the nerve fibers were not cut, I do not know.

Dr. Fred Wise, New York: It must be quite obvious to every one that the cases described by Dr. Oliver are quite different in their clinical aspects and prognosis from the case reported by Dr. Williams. The latter was one of scleroderma associated with disease of the deep structures, an advanced case in which the prognosis from the beginning was very poor, whereas Dr. Oliver's cases are of the type in which the prognosis is good from the beginning. They tend to get well of themselves, or at least do not progress to destruction of the bone and the muscle, as in Williams' patient.

I wish to know whether any of the members have used injections of 2 per cent sodium chloride solution, as a curative remedy. This treatment has been reported by a German observer, apparently with very good results in his hands. I have used the method in four or five cases persistently and carefully, without any results whatever. I am very much interested to learn whether any of you have used this procedure and what the results have been.

Dr. Arthur J. Markley, Denver: In regard to the association with endocrine disturbance, the French surgeon, Leriche, has recently reported a series of cases of scleroderma in which one parathyroid gland was removed, a much less formidable procedure than ganglionectomy. He reported that in all these cases there was a high calcium content of the blood, and after the removal of one parathyroid gland the lesions began to undergo resolution, which continued to complete disappearance. This is an interesting addition to the therapy of this disorder, and may be helpful to those who have to give treatment in these cases.

Dr. Jeffrey C. Michael, Houston, Texas: I recall one case of this type in a child, who was 11 years old when the condition began. Dr. Seale, who was associated with me, worked this case up and reported it at the meeting of the Southern Medical Association two years ago. The girl is now 16, and the case was unquestionably associated with endocrine disturbances. Menstruation was greatly delayed, secondary sexual characteristics did not develop until she was nearly 16, and pharmacodynamic tests showed a definite disequilibrium of the autonomic nervous system. We looked up the literature, in which I recall the article of Hoffmann, who thoroughly studied many cases, and found the same thing in connection with the autonomic nervous system. I think cases should be studied thoroughly from this standpoint, and more enlightenment may come to us regarding this disease.

DEMODEX FOLLICULORUM

ITS RÔLE IN THE ETIOLOGY OF ACNE ROSACEA *

SAMUEL AYRES, JR., M.D.
AND
NELSON P. ANDERSON, M.D.
LOS ANGELES

The pathogenicity of *Demodex folliculorum* was discussed in a recent paper [1] in which was described a clinical picture consisting of an irritation of the face, usually in women, with dryness, occasionally slight redness, sensations of burning or stinging, and a characteristic dry follicular scale ensheathing the base of the lanugo hairs or plugging the follicular opening. These rather inconspicuous follicular scales, when picked off and examined microscopically immediately after adding a drop or two of 40 per cent solution of potassium hydroxide, usually revealed large numbers of *Demodex folliculorum,* sometimes as many as sixteen organisms closely packed in a single scale. A majority of the patients admitted that they used soap and water infrequently, substituting instead various kinds of cleansing creams. The hypothesis was advanced that the lack of soap and water plus the rubbing in of the creams, by obstructing the sebaceous secretion, favored the abnormal proliferation of these parasites. The organisms occur almost universally in small numbers in the sebaceous ducts of adults and under ordinary conditions are apparently satisfied with the rôle of scavengers. It was pointed out that under certain favorable conditions the parasites could assume pathogenic properties. The rapid disappearance of parasites from the skin, together with the amelioration of the symptoms of irritation following the use of strong antiparasitic applications, further supported the thesis that these organisms were actually the cause of this condition.

A review of the literature brought to light several instances in which *Demodex folliculorum* had been noted in association with certain cutaneous disorders. Lawrence [2] reported its occurrence in several cases

* Submitted for publication, Feb. 8, 1931.

* Read at the Fifty-Fourth Annual Meeting of the American Dermatological Association, in June, 1931, at Toronto, Canada.

1. Ayres, Samuel, Jr.: Pityriasis Folliculorum (Demodex), Arch. Dermat. & Syph. **21**:19 (Jan.) 1930.

2. Lawrence, H.: The Pathogenicity of the Demodex (Owen) in the Human Being, M. J. Australia **2**:39 (July 16) 1921.

of a scaly disorder resembling pityriasis alba and also rosacea. Dubreuilh [3] reported a case similar to those described by one of us, that of a patient showing "slight, but scarcely perceptible, follicular prominence, due to minute corneus projections from the orifices, associated with, in one or two instances, trifling scurfiness." Kaufmann-Wolf [4] noted a definite association between *Demodex* and rosacea in women.

Over two years have elapsed since the first case of pityriasis folliculorum (*Demodex*), a tentative designation for this clinical picture, was recognized. Since then, the cases of forty-one patients have been recorded in whom *Demodex folliculorum* was found under conditions which suggest a pathogenic rôle. Of these, twenty-one cases were of the simple follicular scaling variety, three were atypical cases of acne, resembling the rosacea more than the vulgaris type but not typical of

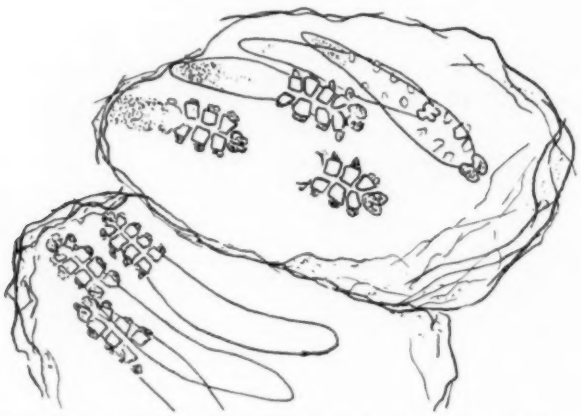

Fig. 1.—Drawing of Demodex folliculorum in follicular scales, prepared with potassium hydroxide and shown under low power magnification.

either, and seventeen were typical cases of acne rosacea. It is this latter group with which this paper is chiefly concerned.

With the exception of the two papers cited, no reference to *Demodex folliculorum* as a cause of acne rosacea could be found in the literature, and none of the current textbooks mention it. Acne rosacea in common with several other dermatoses undoubtedly has a multiple etiology. Gastro-intestinal disorders, particularly hypochlorhydria, have been shown by a number of investigators [5] to be responsible for many cases

3. Dubreuilh, quoted by Stelwagon and Gaskill: Diseases of the Skin, ed. 9, Philadelphia, W. B. Saunders Company, 1921, p. 1258.

4. Kaufmann-Wolf, M.: Concerning the Usual Presence of Demodex Folliculorum in the Pustules of Acne Rosacea, Dermat. Wchnschr. **81**:1095 (Jan. 25) 1925.

5. Brown, W. H.: Brit. J. Dermat. & Syph. **37**:213 (May) 1925.

of rosacea. Routine fractional gastric analysis in several series of cases of this disorder has revealed an unusually high percentage of cases in which the acidity of the stomach was low, occasionally being totally absent. The improvement in many of these cases under oral administration of dilute hydrochloric acid together with dietary supervision is often a striking confirmation of the hypochlorhydria as an etiologic factor. Other causes, such as hyperchlorhydria, dietary indiscretions, focal infections, utero-ovarian disorders and excessive exposure to sun and wind, are occasionally encountered. In spite of the brilliantly suc-

Fig. 2 (Mrs. L. S.).—Acne rosacea, before treatment. Numerous Demodex were found in the pus.

cessful results obtained in some cases, there remains a considerable number that are rebellious to all therapeutic attempts.

In ascribing an etiologic rôle to a given organism, certain proofs are legitimately required. In the case of *Demodex folliculorum,* it is practically impossible to fulfil all of Koch's postulates, since the organism is already present in small numbers in the oil ducts of the face of most adults. However, the following points would seem to indicate the strong probability of an etiologic relationship in certain cases of rosacea:

1. *Demodex folliculorum* is frequently found in considerable numbers in superficial milky vesicles or pustules, or in follicular scales in cases of rosacea.

2. The organism is not found at all, or only rarely in the pustules of acne vulgaris.

3. Many patients with rosacea in whom *Demodex* is found give a history of the infrequent use of soap and water and an excessive use of cream. These mechanical factors theoretically would tend to favor the abnormal proliferation of *Demodex*.

Fig. 3 (Mrs. L. S.).—Improvement following the use of a strong antiparasitic ointment. No Demodex were found.

4. The vigorous use of strong antiparasitic ointments, even on so-called dry, sensitive skins, has in all cases been attended by improvement or virtual cure, and in no cases by any deleterious effects other than a temporary redness and scaling lasting but a few days.

5. In all cases the clinical improvement has been attended by a diminution or total disappearance of *Demodex* from the skin.

These five observations would seem to justify the inclusion of *Demodex folliculorum* as an important etiologic factor in certain cases of acne rosacea. The extremely satisfactory therapeutic response of these

cases warrants a microscopic examination of *Demodex* in all cases of rosacea.

Since Nov. 28, 1928, seventeen patients with acne rosacea have been seen in private practice in whom *Demodex* was found either in superficial pustules or in follicular scales. Fourteen of these patients were women, and three were men. In these cases the use of soap and water was as follows: infrequent use of soap, six cases; daily use of soap, six cases; frequency not stated, five cases.

Fig. 4.—Typical acne rosacea. Many Demodex were found in the pustules. Marked improvement followed antiparasitic ointment with disappearance of Demodex.

Fractional gastric analyses were performed in eleven of these seventeen cases with the following results: high acidity, no case; low acidity, five cases; normal acidity, six cases.

Of the five cases with low acidity, the administration of dilute hydrochloric acid failed to give benefit in one case, in which the lesions subsequently cleared up under an antiparasitic ointment; one case was benefited by hydrochloric acid after a recurrence from a single course

of local treatment. In the other three cases, the hydrochloric acid was not given a therapeutic trial.

Gastric symptoms were mentioned in six of the seventeen cases, denied in ten (one of whom had an almost complete achylia), and not stated in one.

DIAGNOSIS, TREATMENT AND CLINICAL COURSE

Pus obtained from superficial lesions by simple puncture or follicular scales which can be picked off with fine pointed forceps are the best material for examination. It is desirable that the material should be obtained without squeezing or pressure, since a few *Demodex* can be found on many apparently normal skins if sebum which has been forcibly squeezed from the depth of a follicle is examined. In the cases reported herewith, the material was placed on a glass slide, a drop or two of 40 per cent solution of potassium hydroxide was added, a cover slip pressed down and the slide warmed for only a second.

Under low power magnification, the elongated parasites are readily seen with their glove-shaped abdomen and cephalothorax provided with a mouth and four pairs of short rudimentary feet. They are considerably longer than *Acarus scabei,* but much narrower. Three or four organisms may often be found in a single droplet of pus which adheres to the point of a scalpel, while as many as sixteen have been counted, closely packed and overlying each other, in a single follicular scale.

By way of control, the pus in thirteen cases of acne vulgaris and one case of sycosis vulgaris was examined, in several instances repeatedly, without finding a single *Demodex.* Pus from two cases of rosacea was examined microscopically with negative results. The percentage of cases of rosacea in which the parasite does not occur is probably much larger than this small showing would indicate.

Having determined the presence of *Demodex folliculorum by* microscopic examination, the patient is given a strong antiparasitic ointment in spite of the fact that many of the patients protest that their skin is so sensitive that they cannot even use soap and water. In not a single instance, when the question was actually put to a trial, was a patient found who could not tolerate easily the daily use of soap and water in addition to the medication. It is occasionally necessary to supplement the daily soap and water with a small amount of cold cream.

A little experimentation was necessary before a medication was found which was strong enough to kill *Demodex,* and there is undoubtedly still room for improvement as the organism seems to be extremely tenacious of life in spite of de Amicis' statement [6] that he successfully

6. de Amicis, quoted by Stelwagon and Gaskill: Diseases of the Skin, 1921.

combated *Demodex* by washing with soft soap. Lawrence [7] advocates sexually sterilizing the parasites by means of x-rays, but in two of our cases (Mr. J. B. B. and Mrs. L. S.), five one-fourth skin units of x-rays failed to show any inhibitory effects. The eruption showed marked improvement in three weeks after antiparasitic applications. The routine procedure which has proved most successful in our hands is the application of an ointment containing the following:

	Gm. or Cc.
Betanaphthol	4
Sublimed sulphur	8
Balsam of peru	30
Petrolatum	30

The patient is told to rub this preparation vigorously into his face for three consecutive nights after thorough washing with soap and hot water. This usually results in a moderate to fairly severe erythema with scaling, which usually subsides in less than a week. Pus or scales are examined microscopically for *Demodex* before treatment and at weekly intervals. Usually at the end of a week the parasites have largely disappeared, but if no further treatment is given they tend to recur. In order to prevent these recurrences, the patient is instructed to use the ointment once a week for a month or more.

Twelve patients have been treated in this manner, all of whom were either greatly improved or clinically cured at the time of their last visit. The time required to achieve these results varied between four days and six weeks, except for one patient who because of an unusually sensitive skin was not able to use the ointment as thoroughly as necessary. After two and a half months of cautious treatment, however, she is practically well. The following table illustrates the clinical and microscopic observations:

Observations on Twelve Patients

Case	Clinical Improvement	Time Required	Demodex Found
J. B. B.	Marked improvement	3 weeks	Many, 0, 1, 1
F. T. H.	Marked improvement (recurred)	4 days	2
A. M.	Much improved	6 weeks	Number not stated
A. B. C.	Very much better (recurred)	2 weeks	Many, 0, 0
F. S. B.	Cured (recurred)	10 days	Many, 0, 3
L. H.	Better	9 days	2, 4
F. D.	Cured	4 days	3, 0
E. H.	Cured	Not stated	Number not stated
E. J.	Cured	8 days	2
H. H.	Marked improvement	8 days	4
Z. S. D.	Marked improvement	3 weeks	Number not stated
L. S.	Marked improvement	2½ months	3, 5, 0, 0, 0, 4, 0, 4, 0

7. Lawrence, H.: Further Observations upon the Pathogenicity of Demodex (Owen) in the Human Being and of Other Parasites Producing Skin Diseases, M. J. Australia **2**:39 (July 16) 1921.

CONCLUSIONS

1. Seventeen cases of acne rosacea are reported in which *Demodex folliculorum* was found in moderate to large numbers either in pus from superficial lesions or in dry follicular scales, whereas it was absent from the pus in thirteen consecutive cases of acne vulgaris.

2. Following the use of a strong antiparasitic ointment and the daily use of soap and water in twelve of the cases, the acne rosacea was either improved or clinically cured in all instances.

3. Accompanying the clinical disappearance of the lesions of acne rosacea, there was a corresponding diminution in the number of *Demodex folliculorum,* and in some cases a total disappearance of the organisms.

4. In view of the foregoing observations, it seems proper to regard *Demodex folliculorum* as one of several possible causes of acne rosacea.

2007 Wilshire Boulevard.

ABSTRACT OF DISCUSSION

Dr. John E. Lane, New Haven, Conn.: I wish to make one suggestion to the authors; i. e., Demodex is probably the most common animal parasite of the race, and the illustrations of it in textbooks are very antiquated. I hope the authors will make some photographs and pass them on to the writers of textbooks. I think perhaps the best way to demonstrate the specimen is to mount it in cedar oil; in this way a good result can be obtained. The possibility of the parasite being a cause of acne rosacea is interesting, but many more cases will have to be studied to prove it.

Dr. J. Frank Fraser, New York: The authors stated that it is proper to regard Demodex folliculorum as one of the possible causes of rosacea. The fact remains, however, that no evidence has been adduced that these parasites produce any direct, defensive or reparative reaction in the tissue. The parasites are not found in the living tissue; they are found in the sebaceous ducts and undoubtedly act indirectly by increasing the size of the plug. If these parasites played a primary rôle, one should expect to find the same type of reaction as is found in the case of other pathogenic organisms. The part played by these organisms in the production of rosacea is probably largely mechanical.

Dr. William A. Pusey, Chicago: I wish to express the feeling of satisfaction I had in finding the authors trying to incriminate this inhabitant of the skin. Some years ago our distinguished president-elect, in a classic phrase on scabies, said that the female of the species caused the trouble and the male only made rounds. Demodex may be more vigorous. I believe that Dr. Ayres and Dr. Anderson have indicated a plausible idea, that, whether directly or indirectly, Demodex may be at times the exciting factor in folliculitis. It does not make any difference whether the action is direct or indirect if Demodex is responsible, and it may well be true that the relation between Demodex and the man who has this parasite has been so amicably arranged that there is no friction, but that in some cases there may at least be a mechanical irritant in the glands.

Dr. Karl G. Zwick, Cincinnati: In connection with the authors' suggestion that Demodex folliculorum is to be regarded as one of the causes of acne rosacea,

I think it apropos to mention that Borrel ascribed to this ascaris a rôle in the etiology of epithelioma of the face, either as an irritant or as a carrier of a hypothetic infectious agent. A Demodex is the cause of the follicular mange in dogs, which may be accompanied by severe manifestations.

DR. FRED D. WEIDMAN, Philadelphia: Every one knows how common this organism is. The common way of examining for it is to forcibly press on the orifices and express the parasites, but it may also be identified in histologic sections. In routine work of this kind, I have found Demodex folliculorum in several different conditions. A survey of some of my sections from the face showed that in eleven of thirty cases the parasite was encountered as an incidental finding. I have seen it thus in seven cases of cancer, and in one each of seborrheic nevus, foreign body granuloma, cornu cutaneum, adenomatous hyperplasia of the forehead and in one unique case of normal axillary skin reported before the Philadelphia Pathological Society (*Proc. Path. Soc.* **30**:1, 1927). Those observations are useful, for in most of the cases there was no inflammatory reaction around the parasite, which reflects something but not everything as to its pathogenicity; of course, we all agree that the mere finding of the parasite does not constitute pathogenicity. It is still a proper question whether we may not be dealing here (in Dr. Ayres' and Dr. Anderson's cases) with a different species of parasite. That is true of the animal varieties of Sarcoptes, which will produce scabies in man but is mild in its effects and spontaneously dies out. The studies reported here on another dermatosis are, of course, in order.

I have here a few lantern slides, some of which I think will answer Dr. Lane's discussion. In these sections from my original observation of Demodex in the axillary skin, the parasite may be seen with the head invariably directed downward. That explains why Dr. Ayres and Dr. Anderson in their material found all of the parasites pointing in the same direction. I take this as proof that their clumps of material did lie at one time related to the hair follicle, although they secured their material from superficial scales.

These slides comprise only the unusually favorable examples of the parasites, those sectioned longitudinally. Perhaps the feature that will attract attention most and enable one to identify the organism best is the presence of some deep-staining blue spheroidal granules surrounded by a ring of thin pink cuticle. Indeed, in transverse section the only thing to call one's attention to the fact that this is a parasite is the deeply blue stained granules. However, after a little study, the technic of identification can be certainly mastered.

I would conclude with the statement that I do think the findings of the authors are suggestive, particularly in view of the fact that, unlike other cases of demodecosis, the organisms were present on the surface and in such large numbers. They have much the same value as those of Chambers and Somerset, who have found Demodex in 60 per cent of breasts amputated for carcinoma, which is a high percentage indeed. But the work presented here, as the authors admit, is not final.

DR. LLOYD W. KETRON, Baltimore: I believe that Dr. Ayres and Dr. Anderson might more thoroughly establish their views by performing a few biopsies and studying the material in serial sections. It seems quite likely that other fat saprophytes, which are common in the skin of the face, may also be of importance in the production of the disease. I have made a great many cultures from acne but have found that one can establish by serial sections much better than by culture the rôles of the various organisms which may be concerned in diseases of the pilosebaceous apparatus.

DR. SAMUEL AYRES, JR., Los Angeles: The thing that has impressed us most in these cases is the rapidity of response in those cases of rosacea in which Demodex is found and in which treatment is directed against the parasite, a striking contrast to the usual long drawn out treatment of this disease. I wish to emphasize again, however, that we do not regard Demodex as the sole cause of rosacea, but we do regard it as a very frequent cause.

I was interested to see Dr. Weidman's sections. Dr. MacKee mentioned to me the method of sexually sterilizing these parasites according to the work of Lawrence of Australia. I have not carried the work to that point, but in two of our patients who received five or six fractional doses of roentgenotherapy, which was probably not sufficient to sterilize them, there was no effect whatever. I think it would take much more treatment to render Demodex innocuous.

ACQUIRED PROGRESSIVE KINKING OF THE SCALP HAIR ACCOMPANIED BY CHANGES IN ITS PIGMENTATION

CORRELATION OF AN UNIDENTIFIED GROUP OF CASES PRESENTING CIRCUMSCRIBED AREAS OF KINKY HAIR *

FRED WISE, M.D.
AND
MARION B. SULZBERGER, M.D.
NEW YORK

This report deals with an anomaly of hair growth and hair color, which apparently is unique in medical literature.

The patient was a man aged 21, who complained that his light brown, straight and exceptionally vigorous head of hair had begun to undergo a change about two years before he consulted us, with the result that the frontal, temporal and parietal portions of his scalp hair had become "woolly and kinky" and had changed in color—from light brown to black. This curious change in physical character and color was progressive and rather rapidly advancing, in that an extension of the process took place while the man was under our observation.

REPORT OF A CASE

History.—Emanuel S., aged 21, unmarried, born in the United States of Russian Jewish parentage, applied for advice at the skin clinic of the outpatient department of the New York Post-Graduate Medical School in November, 1930. His parents were in apparently good health, and the family history was in all respects negative; certainly nothing that could be construed as being relevant to the change in his hair could be obtained from oft-repeated and careful inquiries as to any abnormalities in his immediate and remote blood relations.

He stated that up to two years prior to consultation, that is, up to the age of about 19, his hair had been strong, healthy, straight and light brown (fig. 1). At that time, he noticed that the hair of the left temporal region became kinky and turned from light brown to black. Gradually the same changes took place on the right temporal area, to be followed without intervals of interruption by similar alterations on both parietal and frontal areas. There were at that time no accompanying subjective symptoms.

Physical Examination.—The patient appeared to be a healthy, active young man, well nourished and of normal weight and height (fig. 2). When he was examined

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* From the Department of Dermatology and Syphilology, New York Post-Graduate Medical School and Hospital.

by us in November, 1930, he did not complain of subjective symptoms, and a general examination revealed no abnormalities.

He was referred to the endocrine department of the Vanderbilt Clinic, where he was examined by Drs. McKinney and Pardee, who made the following endocrinological report:

"The patient has suffered from pains in the scalp which made him feel that the scalp was going to split open and these pains were followed by extreme tenderness. These attacks have increased in frequency during the past six months. For the past two years he has also had attacks of diplopia lasting ten or fifteen minutes. The last attack occurred two weeks ago. Lacrimation is increased at the time but there is no increase in sweating. There is nothing apparently abnormal in the family history or in the patient's history.

"X-ray pictures of the skull and chest were made on January 29, and the following report was made: 'Stereoroentgenograms of the skull in the

Fig. 1.—Photograph of patient at the age of 18 years, showing straight and vigorous growth of hair. The frontal hair became kinky a year after this photograph was taken.

right lateral positions and a film centering over the sella turcica show the cranial tables to be normal with the suture lines patent. No evidence of intracranial pressure is present. The sella turcica appears normal with quite prominent posterior clinoid processes. No evidence of erosion of its floor is seen. A film of the chest shows no evidence of a supracardiac shadow to suggest a persistently enlarged thymus. The lung fields appear clear.'

"The Eye Department reported normal vision and chronic vesicular conjunctivitis, and suggested homatropin refraction. He had epiphora in bright light. He did not return to have the homatropin examination. His basal metabolism was minus 9. Examination of the blood showed: blood sugar, 93.3 mg. per hundred cubic centimeters; calcium, 9.7 mg.; carbon dioxide-combining power, 56; hemoglobin, 98 per cent; coagulation time, three minutes; red blood corpuscles, 5,640,000; white blood corpuscles, 7,500; polymorphonuclear, white corpuscles, 55; lymphocytes, 45.

"It was concluded that there was no outstanding endocrinopathy, although the patient is of the suprarenal type with which is associated enlargement of the thyroid gland. The history of diplopia for two years and lacrimation suggests the possibility of a vegetative hypothalamic or midbrain disorder. The patient is to be studied further."

The distribution and arrangement of the rather profuse, black body hair is depicted in figure 2.

With the exception of the frontal, the temporal and portions of the parietal regions of the scalp, the hair was long, straight and light brown. On

Fig. 2.—Anterior view, showing distribution of body hair.

gentle traction, a few hairs came out, as in the normal person. The entire scalp appeared to be normal; there was no evidence of inflammation, scaling or nevoid formations.

The change in color and physical character of the scalp hair was manifested in the frontal and temporal and in parts of the parietal regions (figs. 3, 4, 5 and 6). It affected the hair in a roughly circular area of the frontal portion of the scalp, extending from the hairline on the forehead, back toward the vertex to a distance of about 4 inches (10 cm.), and affecting the adjacent temporal, supra-auricular and parietal regions to approximately 4 inches beyond the frontal margins of the

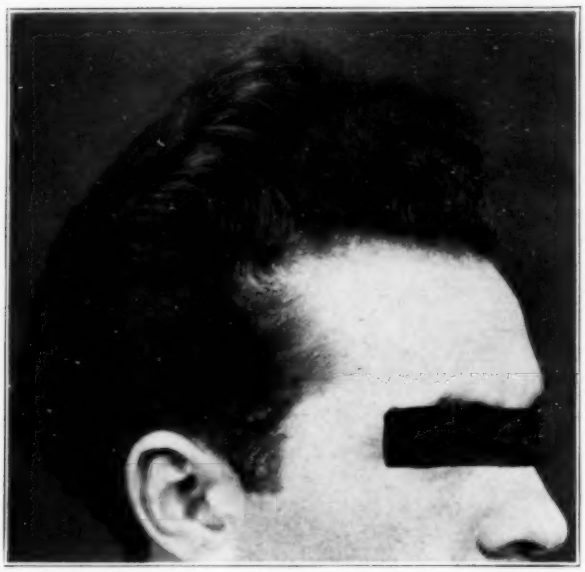

Fig. 3.—Distribution of kinky hair on the frontal, parietal and temporal regions of the scalp.

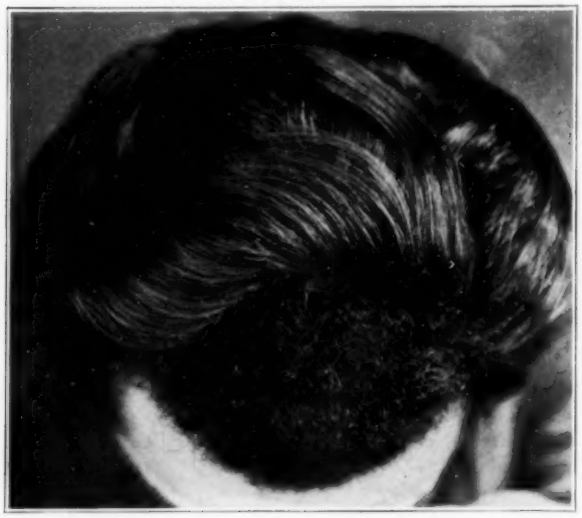

Fig. 4.—Anterior view of the head, showing frontal mass of kinky hair.

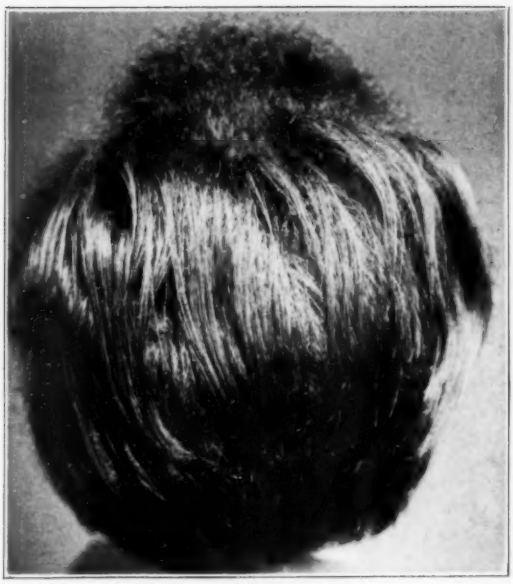

Fig. 5.—Posterior view of the head, showing kinky and straight hair.

Fig. 6.—Anterior view of the head. The kinky and the straight hair have been combed apart, showing a merging of the two types of hair. There is no actual alopecia in the parted area.

capillitium. On the remainder of the scalp the hair was unchanged, retaining its original color and physical character; it was straight, long and light brown.

The changed hair was thick, black and kinky, and, owing to its physical character, had a woolly, almost matted, appearance, like that described among certain Polynesian aborigines. This was in sharp contrast to the immediately adjacent, straight, light brown and apparently normal hair. Although on superficial examination there appeared to be a rather definite line of demarcation between the two types of hair, closer scrutiny revealed that the black, woolly hair merged almost imperceptibly with the normal brown hair. In parting that portion of the normal

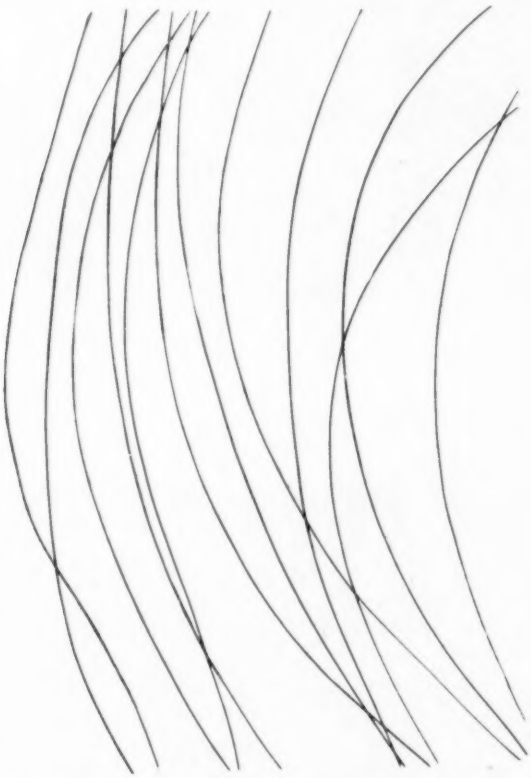

Fig. 7.—Low power photograph of unaltered hairs.

hair that adjoined the altered areas, an undergrowth of short, fine, black and kinky hair became apparent, indicating the gradual and progressive invasion of new areas extending toward the vertex of the scalp (fig. 6). A considerable number of hairs in this transitional zone emerged from the scalp so close to each other that two or three hairs seemed to grow out of the same follicle.

Microscopic Examination.—Samples of the straight and kinky hair were washed with xylene and examined after drying. Other specimens were bathed for ten minutes in a 30 per cent solution of potassium hydroxide. The specimens of light brown, straight hair were of normal appearance (fig. 7); a few of them showed splitting of the ends.

The kinky hair was pigmented in shades varying from dark brown to black. The shafts were much thinner than those of the straight hairs, their diameters being from one-half to one-quarter narrower than those of the straight hairs. While the majority of these kinky hairs exhibited no structural changes deviating from the normal, a small proportion of the specimens presented little globular and roughly spindle-shaped swellings of the shafts, and not more than two or three of them affected an individual hair from end to end. These dilated areas showed no difference in cellular structure as compared with other parts of the shaft. Close to the distal ends of many of these hairs, the shaft was split in two or three segments (fig. 8).

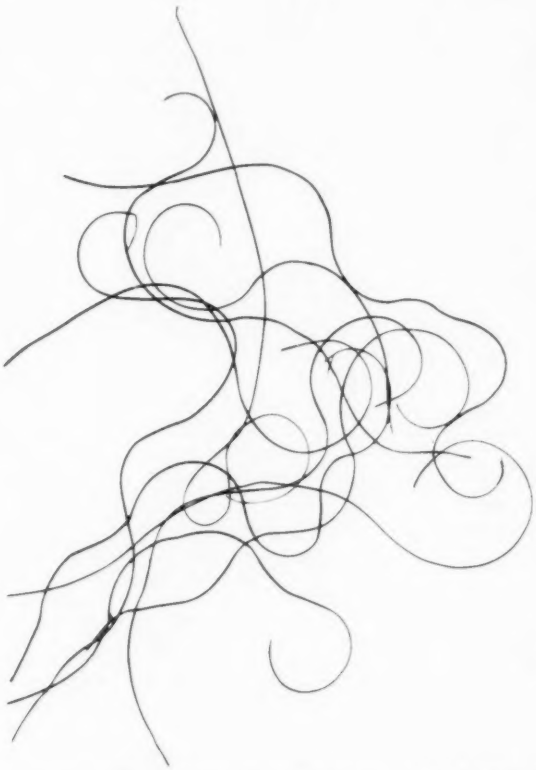

Fig. 8.—Low power photograph of kinky hairs. Observe the split ends.

Two pieces of tissue were removed with a biopsy punch, one from the straight-haired, the other from the kinky-haired, regions of the scalp. The site of the former was the midoccipital area, that of the latter, the center of the circular mass of kinky hair in the midfrontal region.

Examination of the tissue from the straight-haired region revealed no abnormalities (fig. 9).

The tissue from the kinky-haired region also proved to be free from any pathologic changes, with the exception of an alteration in a few of the sebaceous glands manifested as a fatty and granular degeneration of isolated groups of acini.

This change, which is sometimes found in apparently normal scalps, is not regarded as a factor in the pathogenesis of the malformation.

The disposition of the hair shafts with relation to the follicles was identical with that seen in the normal portion of the scalp. The entire follicles were straight in outline (fig. 10); none of them showed the slightest tendency toward the bowlike curvature observed in the hair follicles of certain Negro races, as the Hottentots.[1]

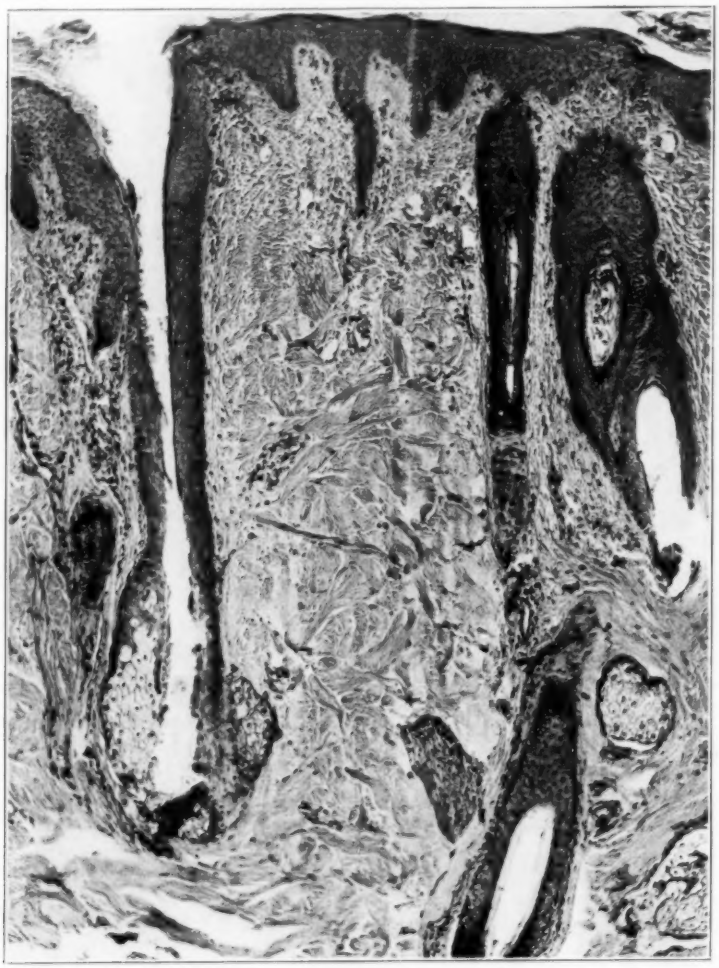

Fig. 9.—Microscopic section from straight-haired portion of the scalp.

The hair papillae appeared to be normal in the few sections in which they were present. Unfortunately, the specimen taken for biopsy was not sufficiently deep to

1. Pinkus, F., in Jadassohn, J.: Handbuch für Haut und Geschlechtskrankheiten, Berlin, Julius Springer, 1927, vol. 1, part 1, p. 177.

include more than a few papillae, but in those that were examined, their outline and cellular structure showed no pathologic alterations.

No histologic alterations could be observed that might be construed as explaining the clinical change. Dr. D. L. Satenstein and Dr. Alexander Fraser concurred in this opinion.

Fig. 10.—Microscopic section from kinky-haired region of the scalp.

COMMENT

Diligent search of the literature failed to reveal any records or reports dealing with an anomaly like the one we have described. Personal inquiries of dermatologists of long experience, both in this country and abroad, also resulted in negative replies.

Two cases, however, bearing certain resemblances to this one were recorded by one of us (Dr. Wise [2]), under the title of "Woolly Hair Nevus." These were congenital malformations affecting circumscribed portions of the capillitium, and apparently were not progressive.

The following is a report of two remarkable instances of a congenital anomaly of the hair on the scalp of two unrelated children; in the first, a child of Jewish parentage and a native of New York, there was an associated nevus pigmentosus linearis of the neck and arm; in the second, a child born in Syria and of Syrian parentage, the birthmark was confined to the hair. In neither case was there any sign of pigmentation (or depigmentation) of the scalp from which sprung the anomalous growth of hair; that is, the diagnosis of nevus pilosus and pigmentosus does not come under consideration, the scalps in both children appearing to be entirely normal.

REPORT OF ANALOGOUS CASES

CASE 1.—E. P., a girl, aged 5, was well developed and intelligent and in good health. Seen from a distance of several yards, the covering of the scalp seemed normal. Closer inspection revealed the fact that the right parietal and entire occipital portions of the scalp were covered by a dense growth of hair that contrasted strongly in color, texture and shape from that of the normal hair covering the rest of the scalp. The normal hair was long, straight, dark brown and of solid texture. The anomalous growth consisted of a uniform area of fine, golden brown, extremely soft and silky hair, which, to the stroking hand, imparted a distinctly "woolly" sensation. The hair was kinky, the undulations of the shaft measuring from ⅛ to ¼ of an inch. The margins of the area covered by abnormal hair were rather sharply defined, but blended with the margins of the adjacent normal hair without showing lines of demarcation; nor was there a gradual admixture of normal and abnormal hair at the borders of the affected areas. In the birthmark area, there were no normal hairs.

The entire right side and back of the scalp, down to the nape of the neck, was the seat of this alteration. The scalp itself was entirely normal, and under careful scrutiny showed no differences in the affected and unaffected portions.

The back of the neck, a little to the right of the midline and extending from the hairline down to the first dorsal vertebra, was the seat of a slightly roughened, dark brown, striated, linear, pigmentary nevus, appearing in the form of three parallel narrow bands. On the right elbow and wrist there were several similar formations, with faint evidences of connecting linear bands between the lesions on the neck and those on the wrist. The upper portion of the pigmented striae blended with the hair nevus at the nape of the neck.

CASE 2.—M. H., a girl, aged 5, was physically well developed and apparently in good health. Mentally she seemed to be somewhat dull, but that may be accounted for by the fact that she was Syrian and spoke little English. She and her parents were born in Syria. Careful questioning as to the possible admixture of Negro or negroid blood in the ancestors of the patient elicited emphatic negative replies.

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2. Wise, Fred: Woolly Hair Nevus; A Peculiar Form of Birthmark of the Hair of the Scalp, Hitherto Undescribed, with Report of Two Cases, M. J. & Rec. **125**:545 (April 20) 1927.

Inspection of the scalp revealed two distinct types of hair growth, the contrast between the two being visible at a considerable distance. The entire top of the scalp, from the frontal hair line to the back of the scalp and extending down the back of the scalp to a line approximately at the level of the tops of the ears, and the parietal portions of the head presented a heavy growth of light brown, soft, kinky, fine-textured hair of a decided woolly feel. The hair above the ears and the entire lower zone of the back of the scalp, down to the nape of the neck, presented a sharply contrasting, well defined growth of strong, slightly wavy, dark brown tresses of normal texture and appearance. On parting the hair, it was seen that there was a sharp line of demarcation between the normal hair and the birthmark hair, and that there was no blending of the two. It reminded one strongly of a truck garden in which two products with contrasting foliage were grown in adjacent plots.

The scalp itself was normal in appearance. There were no moles, pigmentations or birthmarks on the glabrous skin.

This child was exhibited before one of the dermatologic society meetings held in New York, in December, 1925. Professor Fred Weidman of Philadelphia stated in the discussion: "This could be cited as an abbreviated case of mosaic inheritance, in the fullest expression of which an anomaly of pigmentation occurs in plaques more or less like a mosaic. In this patient it is probably atavistic in addition—the anomaly concerns the hair instead of the pigment alone, such as is usually referred to in connection with mosaic inheritance."

Attempts to obtain bits of tissue from the scalp, for microscopic study, were unsuccessful, the parents of both children refusing permission. Strands of normal and abnormal hair were obtained in case 1.

Microscopic examination of the hair from the nevus area showed no pathologic changes.

Search of the literature failed to reveal reports of similar or analogous instances.

In their gross appearance, these two congenital examples of the disorder closely resembled the condition described in the "acquired" form. The altered hairs were soft, woolly and kinky, and occurred in the shape of well defined, circumscribed areas in the midst of straight and vigorous hair. But in one of these congenital cases, there was an associated linear verrucous nevus of the neck and arm, and since this nevus actually fused with the patch of kinky hair at the back of the neck, forming a downward prolongation of the dystrophic mass of hair, it is but natural to assume that the changes in the hair and in the adjacent glabrous skin comprised a compound nevus. It is also probable that a histologic examination of the hair-bearing scalp adjoining the verrucous nevus would have disclosed interesting and perhaps instructive cellular changes in connection with the malformation as a whole; unfortunately, we were unable to obtain a section in this case.

In congenital cases as represented by these two examples, the conception of "birthmark" is supported by Meirowsky's [3] definition: "Nevi are changes in circumscribed areas of skin caused by alterations in the

3. Meirowsky, E., and Leven, L.: Tierzeichnung, Menschenscheckung und Systematisation der Muttermaeler, Arch. f. Dermat. u. Syph. **134**:1, 1921.

germ-plasm (genodermatoses in the stricter sense), or like generalized changes in the integument (generalized genodermatoses: nevus diseases, Darier-Jadassohn)."

Meirowsky's explanation of the systematization of birthmarks is as follows: "The systematization of birthmarks is determined by the germ-plasm. It is an ancient, phylogenetically observed racial peculiarity of man. If aberrations from the normal skin structure occur in the systematization, for example, loss of pigment—hair, gland or other changes—that systematization which is present in all normal skins becomes apparent. In general this systematization has the characteristics of the markings found in animals."

This leads to the question: Are we justified in interpreting the anomaly in this case as a nevus tarda? The similarity of the findings in this case with those in the aforementioned cases of Wise seems to speak for this point of view, for in the latter, strong evidence of the nevus nature was present. Moreover, the localization of the hair changes would rather favor an anomaly due to changes in the germ plasm as transmitted in the form of mosaic inheritance ("blazing" in animals [3]). This conception was suggested by Professor Weidman in his discussion of Wise's second case, presented before one of the local dermatologic societies in 1925.

However, the facts that the condition is slowly progressive, that it is accompanied by evidences of endocrine changes and that no nevoid characteristics were present in the microscopic sections, speak against its nevus nature. Nevertheless, this question will have to be left undecided until other similar cases are observed; cases in which other evidences of later nevus formation occur, or those accompanied by more definite endocrine or other disturbances.

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ERYTHEMA ANNULARE CENTRIFUGUM *

JOHN BUTLER, M.D.
MINNEAPOLIS

Annular or circinate lesions are found in a number of dermatoses, but there is a condition that was first described by Darier [1] which has been given the appropriate name of erythema annulare centrifugum and which is believed to be an entity by those observers who have had the opportunity to study a case and to compare it in all of its details with other conditions of the skin that present annular and circinate lesions.

A careful perusal of the accumulated literature on erythema annulare centrifugum convinces one that the majority of cases described as examples of this condition are cases of circinate urticaria or gyrate toxicoderma, probably closely allied to erythema multiforme or erysipeloid. If one has carefully studied a true example of erythema annulare centrifugum, certain features, which will be described later, serve to identify this condition, for the present at least, as a morphologic entity.

LITERATURE

To Darier [1] belongs the distinction of having described a centrifugal annular eruption that has certain characteristics that entirely differentiated this condition from other common dermatoses, such as erythema multiforme, dermatitis herpetiformis and polycyclic urticaria. When a keen observer describes a condition having distinct peculiarities that appear to him to be sufficiently pathognomonic to accord to the disease a special title and recording, there usually follow a large number of articles by others who feel that they recognize in more or less ordinary dermatoses the peculiarities of this newly described condition. This has been the case with the dermatosis herein discussed. I therefore deem it advisable to devote considerable space to Darier's publications. His definition of erythema annulare centrifugum was that the eruption consists of large rings with elevated borders in festoons or arcs, protuberant and firm to the touch, which cover large areas of the trunk, are pink and bear a slight scale. The lesions grow eccentrically and the outlines of the lesions change accordingly so rapidly that at the end of eight or ten days the original lesion is entirely transformed. In turn this design breaks up, disappears and is replaced with new elements of the same

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* From the Division of Dermatology, University of Minnesota.

* Read before the Fifty-Fourth Annual Meeting of the American Dermatological Association, Toronto, Canada, June, 1931.

1. Darier, J.: Érythème annulaire centrifuge (papulo-circiné migrateur et chronique) et éruptions analogues, Ann. de dermat. et syph. **6**:57, 1916-1917.

type. Attack follows attack. However, the morphologic features always change about as outlined. This surprising clinical picture forcefully draws one's attention, and its extreme rarity gives it a special place in dermatology.

Darier saw his first example of the condition twenty years before the publication of his report. He preserved the photographs and sections, waiting to see further analogous cases or reports before arriving at a conclusion. After prolonged consideration, Darier decided that although similar cases having the same configuration, the same behavior and the same duration were reported or exhibited before dermatologic societies, his case differed in that it was not an erythema and had different subjective symptoms.

One will readily realize that a detailed discussion of all eruptions with annular, circinated configurations would be a tremendous task. The important and outstanding characteristics of erythema annulare centrifugum are, not only its outline, but its systematic progradience and its firm consistency without exudation.

Darier's first case was seen in 1898. A man, aged 26, in whose case a diagnosis of syphilis had been made, exhibited an abundant ringed eruption which was located on the trunk and the medial portions of the upper extremities, while the head remained entirely free. In this particular patient the topography was quite fixed. At each examination, elements of different ages were usually present, and their evolution was regular. A small, pink plaque from 0.5 to 1 cm. in diameter appeared, which was flat or slightly depressed in the center. Palpation revealed a distinct indurated border or collar. Soon the border extended centrifugally in a ring of a deep pink, about 6 mm. in width and 3 mm. in height; to the touch it felt like a taut cord. At the same time, the central area became depressed to the level of the surrounding integument and resumed a normal appearance with the exception of slight pigmentation. The evolution was so rapid that in a week's time a lesion the size of a twenty-five cent piece became as large as the palm. The fully developed lesion persisted for about a fortnight, and then disappeared leaving little, if any, trace. Certain lesions, by their extension, met other advancing lesions and seemed to join them. Thus polycyclic festoons resulted, and here and there an annular lesion developed within such a figure. All sorts of designs resulted from eccentric progression, but the evolution was constant and lasted for several months. Since lesions formed and reformed in the same area, apparently no local immunity developed in the tissue.

The pinkish border, elevated and hard, was sharply demarcated from the healthy skin without the slightest halo. The slope toward the healthy skin was abrupt, while the decline inside the lesion was gradual, and the pink color of the border persisted and faded out gradually. The borders were continuous like a cord, and were not made up of closely studded papules or coalesced single lesions. At no time was there the slightest vesiculation, crusting or scaling. The hair did not come out, and the natural hatch marks of the skin were not altered.

Subjective symptoms were entirely lacking.

In Darier's patient, the eruption was present for nine months. New lesions replaced older ones. Finally the lesions began to disappear and in from six to eight days, they had completely cleared up; there was no recurrence.

No etiologic factors could be ascertained. The histologic examination showed a normal and intact epidermis, moderate edema of the papillary body and a fairly diffuse, nonspecific, perivascular infiltrate in the cutis. Plasma and polymorphonuclear cells were not present.

Darier discussed the papers of Sachs, Lipschütz and Wende and approved of the first two reports, but he did not believe that any of the cases except one of Wende's were examples of this disease. He also discussed some other gyrate dermatoses, and concluded that the condition was probably closely related to erythema multiforme, but distinctly different and far too rare not to be an entity.

In 1913 and again in 1923, Lipschütz [2] described two cases that he called erythema chronicum migrans. He cited several cases from the literature and stressed the differences between this condition and erysipeloid. Chronicity seemed to be one of the outstanding characteristics stressed by him and by Riehl, who saw one of the cases demonstrated. Subjective symptoms too were lacking, and no etiologic elucidation could be made. It is noteworthy that this bizarre clinical picture has always attracted attention, and it was very baffling to the most astute observers. The chronicity and lack of constitutional reactions seemed to set it apart from erythema multiforme at once.

Bruhns [3] evidently also observed cases that fitted into the category. The author summarized his observations as follows: Of the rare disease described under the designation of erythema annulare centrifugum or erythema chronicus migrans, two types must be distinguished according to their nature: (1) a type resembling erythema multiforme, but differing from it by abnormal localization and an extraordinarily long duration, in which the efflorescences appear in a desultory manner on the various parts of the body and (2) a type in which an erythematous border gradually pushes forward from one central erythematous spot centrifugally for many weeks and months and may assume serpiginous contours of considerable extension. Bruhns evidently regarded one type as an acute condition comparable to erysipeloid and a second type as conforming to Darier's and Lipschütz's descriptions of erythema multiforme.

De Bella,[4] under Darier's title, described the case of a woman, aged 30, who was affected with a chronic metritis and vegetative erosive proctitis and, who, two months previously, had noticed two red circles on the left hand. The author

2. Lipschütz, B.: Ueber eine seltene Erythemform, Arch. f. Dermat. u. Syph. **118**:349, 1913; Weiterer Beitrag zur Kenntnis des Erythema chronicum migrans, ibid. **143**:365, 1923.

3. Bruhns, C.: Zum Begriff des Erythema chronicum migrans, Arch. f. Dermat. u. Syph. **135**:109, 1921.

4. De Bella, A.: Sopra un caso de eritema annulare centrifugo, Gior. ital. di mal. ven. **65**:1757, 1924.

observed the progress of the disease from the first examination in March to its full development and regression in September. The eruption developed in a few regions, high up on the back, on the neck and on the dorsal surface of the hands. The lesions appeared in successive crops with frequent but not constant symmetry. Ten elements were observed, and they presented the following evolution: The eruption originated from slightly elevated papules of a rosy color and of round or oval form, which were somewhat depressed in the center and measured from 10 to 15 mm. in diameter. These elements changed rapidly in four or five days to perfect rings, from 3 to 4 cm. with centrifugal enlargement. A ring of vivid rose, from 3 to 4 mm. in width, and 6 mm. in height, made up the periphery. In general, this ringlike formation was continuous and uniform and of harder consistency than the initial lesion. The encased area became pigmented after a few days. The rings had a tendency to enlarge, becoming from 5 to 6 mm. in diameter in one or two weeks. They showed a tendency to disappear after three or four weeks. None of the lesions showed a tendency to vesiculation or desquamation at any time. The eruption appeared in crops, either in regression or in full development; it was not preceded by pruritis or other symptoms. There was no fever. The duration of the disease was eight months. The author suggested that the name erythema annulare centrifugum should be used in this case as in others that corresponded morphologically to Darier's original description.

Mibelli [5] expressed the belief that the conditions reported by Darier as erythema annulare centrifugum and by Lipschütz as an erythema chronicum migrans have the same characteristics as regards the eruption, the spreading and evolution, the resolution and the chronicity. The author described five cases observed during about twelve years in Florence. In these five cases all of the elements were of an erythematous character and arose from one round and prominent lesion. The lesions assumed a ring formation; they were prominent and developed centrifugally and extensively and persisted for a long time. The author thought that these eruptions were due to toxic or general infections. He also mentioned the possibility of the condition originating from digestive or rheumatic disorders.

In a recent article, Christine [6] stated that he thought that observations and evidences have gradually accumulated that make it possible to accord a definite place to erythema annulare centrifugum. He reported four observations. He made blood cultures, which proved to be sterile, and no fungi were found on direct cultivation. The histologic examinations were essentially like Darier's; certainly they were not noteworthy enough to be pathognomonic. He stressed the importance of barometric changes as a factor in the onset of the disorder, a fact which in my opinion indicates the relationship of the disease to erythema multiforme.

5. Mibelli, A.: Sugli eriteme annulari centrifughi, Gior. ital. di mal. ven. **65**: 1308, 1924.

6. Christine, M. L.: Sur l'étiologie de l'érythème annulaire centrifuge, Ann. de dermat. et syph. **1**:609 (June) 1930.

Drescher [7] demonstrated a case before the Frankfurt Dermatological Society that seemed to be an example of erythema annulare centrifugum. Professor Herxheimer evidently preferred to use the terminology of Lipschütz, for he designated the case as one of erythema migrans.

In London, before the Royal Society of Medicine, Gray [8] demonstrated a case in a woman with an annular eruption that seemed to be too acute to fit this disease precisely. This case again demonstrates how the configuration is apt to be so striking in many diseases of the skin that one likes to employ descriptive terminology.

In Vienna, Sachs [9] demonstrated a case that seemed to be like Darier's in every particular, while in a case of Barber's [10] the patient had fever and a focal infection, and the condition might have been erythema multiforme.

Balban [11] described a group of cases in which there were gyrate figures that he thought were caused by insect bites.

Richter [12] grouped many types of centrifugal eruptions and discussed them from the point of view of endocrinology, but he was not specific enough dermatologically to make his report throw any light on erythema annulare centrifugum.

Graham and Throne [13] recently reported six cases of annular eruption that they felt could be grouped under this title. A careful analysis of their cases and photographs makes it difficult for me to be in entire accord with them in their diagnosis. Their case 5 appears to fulfil the requirements of Darier. To be sure, one should not attempt to draw conclusions without a more careful investigation. These authors are to be commended for their bibliography and for the majority of the cases that they have summarized. I shall not repeat them, but refer the reader to this article. They quoted Fred Wise, whose case with its keloid-like borders and annular configurations was especially characteristic.

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7. Drescher, K.: Erythema migrans, Zentralbl. f. Haut- u. Geschlechtskr. **19**: 836, 1926.

8. Gray, A. M. H.: Case of Erythema Circinatum, Meeting of Royal Society of Medicine, Nov. 29, 1924.

9. Sachs, Otto: Erythema migrans chronicum, Arch. f. Dermat. u. Syph. **137**:100, 1921.

10. Barber, H. W.: Erythema circinatum persistans, Dermat. Ztschr. **48**:85, 1926.

11. Balban: Erythema migrans, Dermat. Wchnschr. **78**:55, 1924.

12. Richter, Wilhelm: Centrifugal Annulare Erythema, Dermat. Wchnschr. **85**:1549, 1927.

13. Graham, T. N., and Throne, B.: Érythème annulaire centrifuge, Arch. Dermat. & Syph. **22**:771 (Nov.) 1930.

Tachau [14] discussed the nontypical erythemas and classified the gyrate type under four divisions: (1) erythema simplex gyratum (Jadassohn); (2) erythema mikrogyratum persistens (Strempel); (3) érythème annulaire centrifuge (Darier); (4) erythema chronicum migrans (Lipschütz).

One will readily realize that the types are quite allied, but differentiation is made largely on the grounds of length of clinical course and subjective symptoms.

REPORT OF A CASE

History.—The patient (fig. 1), first seen in Dr. Michelson's clinic at the University of Minnesota in 1927, was presented by Dr. Boreen for Dr. Michelson

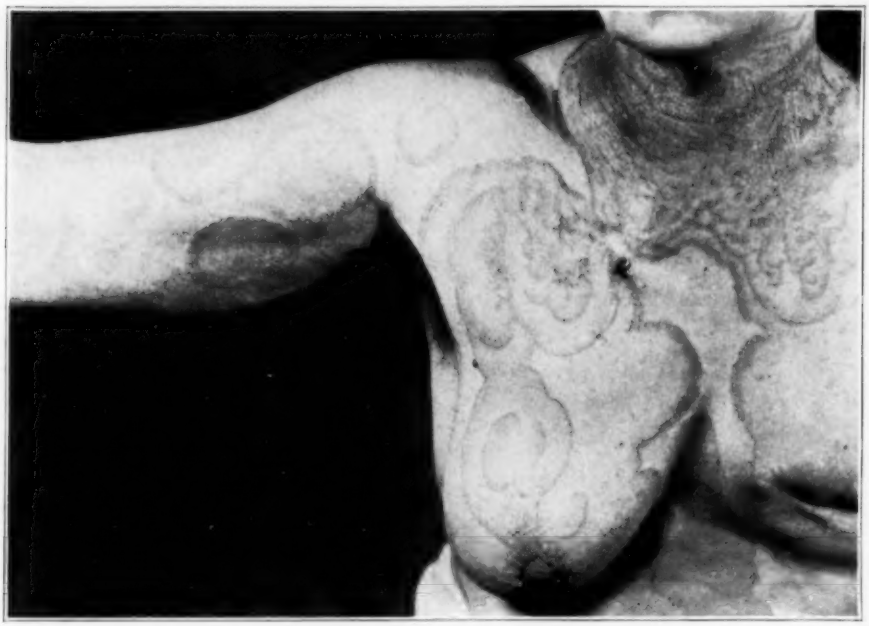

Fig. 1.—Photograph of patient with erythema annulare centrifugum showing the eruption at its height.

at the Minnesota Dermatological [15] meeting, Feb. 2, 1927. The discussion centered about the diagnosis of syphilis, infection caused by fungus (tinea imbricata) and an undiagnosed condition. Dr. Paul O'Leary, Dr. Edward Gager and Dr. George Olson said that they were certain that the condition was syphilis. Major Lincoln (U. S. A.) stated that he had seen cases of infection due to tinea imbricata and that in this case there was not sufficient scaling for such a diagnosis. Dr. S. E.

14. Tachau, P.: Erythema exudativum multiforme und nodosum, Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1928.

15. Boreen, C. A.: Case for Diagnosis, Arch. Dermat. & Syph. **16**:229 (Aug.) 1927.

Sweitzer favored a diagnosis of infection due to fungus. Dr. Montgomery said that the histologic section indicated that the condition was not syphilis. Dr. Michelson stated that he could not consider the condition syphilis and that he would not diagnose it as being due to fungus in the face of negative observations for fungus, both in fresh preparations and in culture. The case was kept under more or less constant observation, and after Professor Darier's article appeared, Dr. Michelson was able to arrive at a positive diagnosis of erythema annulare centrifugum, and filed the case for future report.

The patient, a woman, aged 60, who was suffering from partial cardiac insufficiency, was able to get about, but was not active. Her past history was irrelevant, except for two miscarriages that occurred in the twenties. The Wassermann test

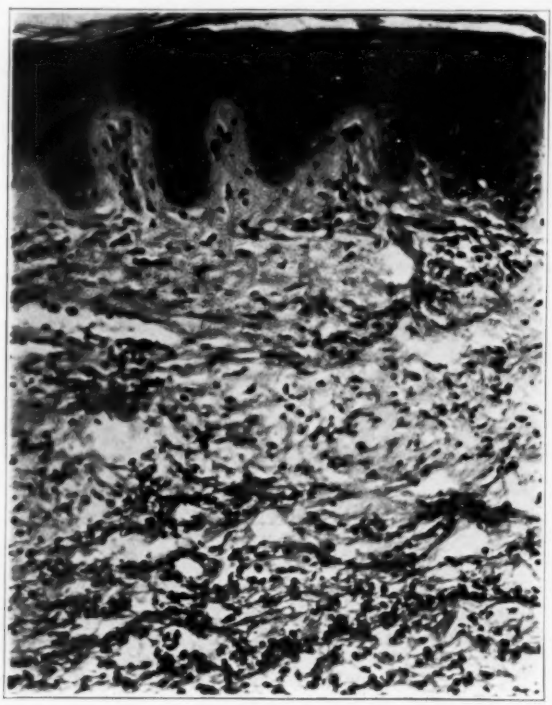

Fig. 2.—Histologic section from chest taken at biopsy.

gave repeatedly negative results. Aside from the cardiac condition, the most careful search revealed no abnormalities.

The patient stated that the eruption began insidiously over the chest and near the axillae as small pink papules that did not itch. The lesions gradually spread peripherally, making many arabesque figures. The border of the lesions was distinct, of an ivory color and distinctly palpable. In fact, the resistance was about that of a hypertrophic scar. The chest, axillae and the upper part of the arms were involved. The face was free from lesions. No vesicles, crusts or scales were present. The eruption was widely spread and unique.

Course.—After presentation, the patient was given a thorough therapeutic test with neoarsphenamine, bismuth and potassium iodide, without the slightest effect on the lesions. Then strong exfoliating ointment was resorted to and even freezing with liquid air. This produced a scaling, but not true regression. After some six months of observation, the lesions gradually disappeared as mysteriously as they had arrived only to reappear within a year and to go through approximately the same course. Three attacks were observed, and at the time of writing (1931) the patient was entirely free from lesions, while her general condition was the same.

At the height of eruption, a biopsy was made from a lesion on the chest. Examinations for fungus both in scrapings and in culture gave negative results in every respect.

Histologic Observations.—The section (fig. 2) was removed from the chest, fixed in a solution of formaldehyde, embedded in paraffin and stained in the routine manner. The epidermis showed a slight amount of lamellar hyperkeratotic scaling, but it was intact; no striking change was noted in this layer. There was a rather marked lymphocytic infiltrate in the papillary and subpapillary portions of the cutis, which was arranged particularly along the horizontal deeper blood vessels. This infiltrate was nonspecific in type containing no plasma, polymorphonuclears, or giant cells. There was some edema but no hemorrhage. The section was of value in that it ruled out syphilis, because the infiltrate was too sparse and contained no plasma cells, which would have been expected in an annular recurring syphilid. Fungus and other epidermal changes were not considered because of the normal epidermis. The conclusion from the histologic examination was that the condition was a chronic inflammation of nonspecific type; it was nonpathognomonic but consistent with a clinical diagnosis of erythema annulare centrifugum (H. E. Michelson).

DESCRIPTION AND DIAGNOSIS

From the study of this case and from a careful examination of the literature, I believe that Darier described a condition that is an entity morphologically, the two outstanding features of which are: (1) polycyclic, annular or gyrate arrangement and (2) keloid-like consistency.

In the authentic cases the surface is devoid of scales, crusts or vesicles. One must not be misled by artificial surface changes brought about by applications of medicines.

The color varies from pink to ivory yellow. Some of the reports stated that the centers of the lesions become slightly pigmented.

The induration of the border is distinctly a reason why syphilis has been considered so frequently. The palpating finger feels a rubber-like resistance that is decided and permanent. Rubbing does not erase it, and no urtication results.

The figures vary from small depressed plaques or papules for an early lesion to large festoons that result from peripheral migration of the border and coalescence of adjacent figures for the other lesions. Occasionally a new lesion and even a third lesion begin within a lesion and traverse the soil that has been involved. It is probable that there is no immunity of the tissue, or at least that it rapidly vanishes.

Subjective general and local symptoms are entirely wanting, which is a distinct difference from erythema multiforme and dermatitis herpetiformis.

There is no elevation of temperature or leukocytosis. Cultivation of the blood, investigations for fungus and all other laboratory procedures that were done gave negative results.

All cases reported were chronic. Acute cases that looked like erythema annulare centrifugum were another condition. Several weeks elapse from the beginning to the formation of the fully developed figures, when a stationary period is reached; the condition remains in this state until it gradually disappears.

In what classification does this queer but unique dermatosis belong? It is too chronic and symptomless for erysipeloid and erythema multiforme. It does not itch enough for dermatitis herpetiformis. Syphilis and leprosy are easily excluded. Urticaria is more evanescent. The microscopic observations exclude lichen planus and granuloma annulare but simulate those of erythema multiforme to a degree that would make differentiation on those grounds alone impossible.

Tinea imbricata is a tropical disease, occurring in the wild tribes in the Malay Peninsula. It is characterized by superficial circular figures bearing thin, paper-like, flaky scales; it is itchy, and the entire body is covered with lesions.

Erythema annulare centrifugum seems to be confined to the trunk, rarely, if ever, involving the face.

In conclusion, one may state that erythema annulare centrifugum, as described by Darier, is an exceedingly rare dermatosis, and that on the grounds of the gyrate arrangement observers who are not meticulously careful are prone to include too many conditions under this title. The outstanding characteristics are the outline of the eruption, the distinctly hard border, the chronicity and the lack of subjective symptoms. The etiology is obscure. Apparently the course is self-limited.

There is no specific treatment, and symptomatic therapy is of no avail. The prognosis is good.

SUMMARY

1. The literature on erythema annulare centrifugum is reviewed.
2. Many cases reported under this title do not conform with Darier's description.
3. The disease is a morphologic entity.
4. A true case is reported, with histologic observations.

ABSTRACT OF DISCUSSION

DR. JOSEPH V. KLAUDER, Philadelphia: At the meeting of the Philadelphia Dermatological Society, in June, 1931, I presented a patient with a diffuse eruption of erysipeloid on the body. About eight months previously, the infection had

first appeared on the finger following a prick received while handling fish. The eruption extended up the arm and gradually involved the entire cutaneous surface. On the trunk there were large circinate erythematous lesions, a replica of those in the case presented by Dr. Butler. So far as I know, a generalized eruption of erysipeloid has not been recorded in the literature. I believe, however, that this disease should be thought of in the consideration of cases similar to that of Dr. Butler. In the study of such cases, pieces of the skin should be removed for culture in order to demonstrate the bacillus of swine erysipelas.

DR. FRED WISE, New York: It is a well known fact that the publication of reports of rare dermatoses seems to stimulate the sudden appearance of similar or identical examples in clinics and society meetings, for example, the recent cases of varioliform lesions in pityriasis lichenoides chronica.

Dr. Butler called attention to the recent paper by Graham and Throne, in which six cases were reported, but only one of which seems to conform strictly with Darier's original description. It has been pointed out that the main features attending Darier's type are chiefly the polycyclic conformation, the keloid-like induration and the ivory-yellow color of the edge of the gyrate lesions. I observed such a case ten or twelve years ago in a man, about 45 years of age, the brother of a prominent New York physician. In this patient the lesions were of several years' duration and did not respond to any form of treatment, including repeated exposures to roentgen rays. About two years after the last treatment the man died of myocarditis; the lesions had remained unchanged at the time of his death. In this case, the microscopic appearance of a section from the elevated and indurated border was most unexpected; instead of a dense cellular infiltrate that I had anticipated seeing in the corium, there were only a few widely scattered lymphatic cells in the upper part of the corium; the elevation and firmness of the edge of the lesion were evidently due to edema; there was nothing to indicate the chronicity of the process or its lack of response to treatment.

Of the four types of gyrate erythema described by Tachan, I have encountered three: a case of Jadassohn's erythema gyratum simplex was exhibited before one of our societies by Dr. Bechet about five years ago; the condition appeared in a woman, aged 22, and consisted of pink, slightly elevated, gyrate, rather delicate and sharply defined bands, ⅛ inch (3.17 mm.) in width, running transversely along the front of the neck. There were no subjective symptoms, and the lesions did not respond to ordinary therapeutic measures. I observed a similar eruption on the front of the thigh of a woman aged 43. Neither of these patients exhibited an elevated, keloid-like margin, or an ivory-yellow color. Strempel's erythema mikrogyratum persistens is an eruption with which I am not acquainted. Darier's erythema annulare centrifugum presents another clinical feature worthy of emphasis: namely, in the typical case, the external surface of the elevated border is steep and abrupt, while the internal border presents a gentle slope toward the center of the gyrate or annular patch. The erythema chronicum migrans of Lipschütz seems to me to be the variety most commonly encountered in cases demonstrated in our medical societies. The fact that in most cases its clinical appearance calls for a differentiation from erysipeloid indicates the extent of its nonsimilarity to cases of Darier's type with their prominent borders. However, I am in favor, at least for the present, of regarding these eruptions in the light of a large group, which, like the various types of parapsoriasis, should be scrutinized with relation to each other.

DR. HOWARD FOX, New York: We should feel indebted to Dr. Butler for bringing this curious disease to our attention. The cases that correspond precisely with this one are extremely rare. I think that eventually other cases that differ slightly will be placed with these in a general group. This is better than too much hair splitting in diagnosis.

If I had seen the patient when first presented, I should not have made a correct diagnosis. I should not have considered the condition an annular papular syphilid, in view of my experience with diseases of the skin in the Negro. This

type of syphilid is rare in the white race; it nearly always affects the face and occurs in the early stage when the Wassermann reaction is usually positive. Furthermore, the annular syphilid is by no means as profuse as the eruption in this disease. Even in the extraordinary case of the late Dr. Carmichael which I published there was less profusion of lesions than in this eruption.

DR. GEORGE M. MACKEE, New York: I feel much the same as Dr. Fox does about restricting the condition to Darier's original description, because with such a restriction it is difficult to classify cases that are similar but not identical. We find that difficulty in the New York Dermatological Society. Most of the cases presented by Graham and Throne were subjected to this controversy.

I recall a case that has not been published hitherto, which occurred in a patient who had much the same type of lesions as those mentioned by Dr. Wise, with the sharp outer border and the same type of inner border. These lesions, perhaps a couple of dozen in all, resembled granuloma annulare. They were exceedingly persistent; all of them lasted for more than a year and some for several months longer. I had an opportunity to follow that patient for about two years; finally bullae and lesions of ordinary erythema multiforme developed. The histologic condition was more that of erythema multiforme than of any other condition, except that there was more edema with less infiltration. I should like to know how Dr. Butler would classify such a case. I have included such cases under the classification of centrifugal erythema rather than ordinary erythema multiforme.

DR. JOHN BUTLER, Minneapolis: Since seeing this patient, we have observed two others who presented lesions somewhat similar to those just described.

One patient, a Polish woman, aged 64, presented by Dr. John Madden of St. Paul at a Minnesota Dermatological meeting, who had three palm-sized annular lesions on the back, forearm and thigh, stated that the lesions had existed in the same location for ten years. The border of the rings was made up of coalesced nodules, with a similar grouping of nodules tending toward arc formation within the larger circles. There was a definite fawn-colored hyperpigmentation in the enclosed area. A histologic section was essentially the same as those in the case described. A serpiginous syphilid of such long duration without structural changes in the skin would seem improbable, yet following a course of neoarsphenamine the lesions involuted promptly, leaving a normal skin. Dr. Sweitzer has an interesting case under observation at the present time at the General Hospital, Minneapolis. A man, aged 32, hospitalized for meningovascular syphilis received a lumbar puncture on April 29. A few days later, an eruption appeared on the abdomen, back, neck and buttocks, consisting of annular lesions with intersecting arcs; the borders were definitely raised, indurated and cordlike and progressed at the rate of 1.5 cm. in ten days. There were no subjective symptoms; the lesions were not urticarial, and the histologic section was nonsyphilitic. By June 1, the lesions had completely involuted. No external medication and no internal medication, except sodium bicarbonate in small doses, had been given.

These two cases might be regarded by some observers as examples of erythema annularis centrifugum, which is specifically characterized by a keloid-like border sloping toward the center, peripheral migration, absence of subjective symptoms, chronicity and lack of response to treatment.

GRANULOMA ANNULARE DISSEMINATUM

REPORT OF TWO CASES *

SAMUEL MONASH, M.D.
NEW YORK

Granuloma annulare, originally described by Colcott Fox in 1895 as a "ringed eruption of the fingers" and given its present name by Radcliffe-Crocker, has been the subject of numerous contributions both here and abroad. A thorough study of the subject was made by Little,[1] who clarified the mass of material presented up to 1908 and helped to establish the disease as a distinct clinical entity. He also suggested that it was probably tuberculous in origin.

As Little very properly wrote, the primary lesion in granuloma annulare is a nodule or papule, forming a whitish semitranslucent swelling, becoming more visible if the skin is stretched, when it is easily felt as a deep-seated, hard, pealike body in the skin. By the fusion of these elements, often grouped in a circinate or crescentic manner, or by peripheral extension of the papules or nodules with central clearing, the annular pictures that give the disease its name are produced. The lesions are found most commonly on the dorsum of the fingers and wrists, next on the feet, ankles, neck, elbows, knees and buttocks and rarely on the face and scalp.

Knowledge of the disease has not increased much since Little made his contribution. It was then known that lesions would occasionally disappear or undergo marked involution after biopsy, after treatment with a variety of ointments and sometimes spontaneously without treatment. Carbon dioxide snow, x-rays and radium have also been used, followed by disappearance of the lesions in some cases but not preventing recurrences.

The question as to whether or not the disease is of tuberculous origin has not yet been definitely settled. Numerous guinea-pig inoculations have been made with uniformly negative results. Reports of tuberculin tests are conflicting. Thus Darier,[2] for example, stated that the reaction is usually positive, whereas Jadassohn [3] reported that it

* Submitted for publication, May 2, 1931.

* From the services of Dr. Paul E. Bechet, Dr. Charles Mallory Williams and Dr. Eugene F. Traub at the Stuyvesant Square Hospital, formerly the New York Skin and Cancer Hospital.

1. Little, E. Graham: Granuloma Annulare, Brit. J. Dermat. **20**:213, 1908.

2. Darier, J.: Précis de dermatologie, ed. 4, Paris, Masson & Cie, p. 332.

3. Jadassohn, J., in discussion on Weidman, F. D., and Besançon, J. H.: Erythema Elevatum Diutinum, Arch. Dermat. & Syph. **20**:593 (Nov.) 1929.

is generally negative but considers this to be due to a positive anergy. In some cases,[4] the histologic examination indicated a typical tuberculous structure. Whether the latter is found only in lesions due to the tubercle bacillus is, however, a moot question. The only definite report on the finding of bacilli in a lesion was made by Dittrich.[5] Using the Klingmuller modification of the Ziehl-Neelsen stain, he found acid-fast bacilli in the necrotic areas, in the walls of the blood vessels about them and in regenerated areas. Up to the time this paper was written, these findings have not been confirmed by other observers.

During the past five months I have had under observation two cases of granuloma annulare, which, in addition to the usual annular lesions, presented other interesting features which place them in a class by themselves. These were the presence of numerous discrete papular lesions, some of which later assumed an annular arrangement, the appearance on the face of erythematous areas, slightly, if at all, infiltrated and devoid of papular or nodular lesions, and the rapid dissemination of the diseased process as evidenced by the sudden outcropping of many discrete papular lesions. Biopsies of these various types of lesions all showed similar microscopic pictures.

REPORT OF CASES

CASE 1.—*History.*—Mrs. I. K., aged 58, a Jewess, born in Russia, three and a half years before coming under my observation had lesions in the form of two rings on the right hand. A few months later these spread to the left hand. She had received numerous roentgen treatments which temporarily flattened the lesions. About two months before consulting me, she first noted a reddening of the forehead, more on the left than on the right side. For the past five years she had been undergoing dietary treatment for mild diabetes. Except for occasional attacks of bronchitis, her past history was irrelevant.

Examination.—The patient was an elderly, somewhat overweight woman, whose physical examination revealed only a chronic bronchitis in addition to the skin lesions. A description of the latter, as seen on Nov. 19, 1930, follows:

The dorsum of both hands and of most of the fingers was the seat of varying sized, typical lesions of granuloma annulare, some of which took the form of complete circles, others of arcs of circles. All showed the raised, erythematous, infiltrated border, which, on tension of the skin, assumed a yellowish-white color.

On the forehead, more marked on the left than on the right side, were several areas of erythema with a slight purplish tinge. These were irregular in size and

4. Gougerot and Bonnin: Granulome annulaire ou érythemato-sclérose circinée des mains à structure tuberculoïde, Bull. Soc. franç. de dermat. et syph. **26**:33, 1919. Stettler, E.: Beitrag zur Kenntnis des Granuloma annulare, Arch. f. Dermat. u. Syph. **132**:314, 1921.

5. Dittrich, O.: Zur Aetiologie des Granuloma annulare, Arch. f. Dermat. u. Syph. **153**:599, 1927.

shape, covering practically the entire left side and the outer half of the right side. Only a slight suggestion of infiltration was present. Under pressure with a diascope, the erythema completely disappeared.

Laboratory examinations gave the following results: The Wassermann reaction of the blood was negative. The urine was normal. The blood count showed: red blood cells, 4,900,000; hemoglobin, 96 per cent; white blood cells, 9,800; polymorphonuclears, 50 per cent; lymphocytes, 46 per cent; eosinophils, 3 per cent, and mononuclears, 1 per cent. The chemical analysis of the blood showed: urea nitrogen, 16.8; uric acid, 2.5; sugar, 142, and sodium chloride, 458.

An intracutaneous injection of 0.0001 Gm. of old tuberculin resulted in a strongly positive reaction.

Course.—On December 8, the lesions were still present without any appreciable change. In addition, during the past ten days, numerous papular, slightly raised and infiltrated discrete lesions, varying in size from 1 to 3 mm. in diameter, appeared on an erythematous background, just below and behind the lower border of both mastoid regions, covering an area about 3 cm. in diameter. At this time 0.000001 Gm. of old tuberculin was given subcutaneously.

On December 15, the erythematous area on the forehead was slightly lighter in color. No reaction was present at the site of the last injection of tuberculin, and 0.00001 Gm. was given subcutaneously.

On December 22, there had been no reaction from the injection of tuberculin, so the dosage was increased to 0.0001 Gm.

During the following week, numerous discrete, pinhead sized and slightly larger, erythematous, slightly raised papules, having a yellowish-white tinge when the skin over them was tensed, appeared in the upper sternal region and on the dorsal surfaces of the lower third of both forearms (fig. 1). In addition, a reddish, slightly purplish, uninfiltrated area, 1.5 cm. in diameter, formed on the face, about 1 cm. lateral to the left corner of the mouth. A few new small annular lesions also appeared on the inner aspect of the left middle finger.

Microscopic Examination.—Biopsies were now taken of the erythematous area on the forehead, of a papular lesion on the forearm, of an annular lesion on the hand of one week's duration and of an annular lesion of the hand of approximately one year's duration. The sections were examined with Dr. Else A. Barthel.

A section from the erythematous lesion on the forehead was stained with hematoxylin-eosin. The epithelium was thinned, atrophic and devoid of rete pegs. Immediately below the epithelium were several acellular areas, the fibers of which took a bluish stain. (NOTE.—These areas were due to senile degeneration of the collagen fibers, which resulted in their taking both a basic and Weigert stain.) In the midcorium and lower corium there was an area of marked edema in which the collagen fibers were fragmented, many of them replaced by a faint bluish-staining, partly fiber-like and partly granular mass. Throughout this area there was a marked infiltration of chiefly epithelioid cells, a few giant cells of the Langhan's type and a few lymphocytes. The blood vessels in the section were dilated, and their walls slightly thickened.

The basophilic area high up in the corium took the Weigert stain. The infiltrated area in the midcorium and lower corium was devoid of elastic fibers.

A section from the papular lesion on the forearm, one week old, was stained with hematoxylin-eosin. The epithelium was normal. In the upper corium were two areas that were infiltrated with a dense mass of lymphocytes and epithelioid cells, the former predominating. A few giant cells, with the nuclei in central agglomeration, were present. The collagen fibers in these areas were either broken

into fragments or replaced by a faintly bluish-red-staining granular mass. Outside of these areas were swollen elastic tissue fibers which took a purplish stain. The blood vessels were dilated throughout.

With the Weigert stain, there was an absence of elastic tissue fibers in the infiltrated areas; elsewhere they were swollen.

A section from the annular lesion on the finger, one week old, was stained with hematoxylin-eosin. The epithelium was normal. The principal changes were present in the midcorium and lower corium. Here there were several areas in which the collagen fibers were broken into short fragments, separated from one

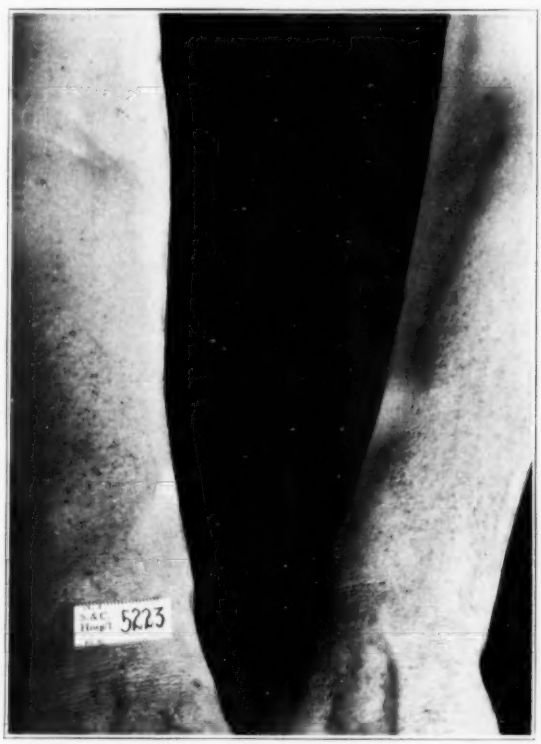

Fig. 1.—Numerous discrete papular lesions on both forearms.

another in large part by an acellular purplish-staining material, arranged partly in the form of fibers and partly as a granular mass. Surrounding these areas the tissue was edematous and infiltrated with large numbers of epithelioid cells and some lymphocytes. There were other areas in which the collagen fibers showed beginning basophilic degeneration with some fragmentation. These areas were infiltrated with numerous epithelioid cells, a few giant cells with both peripheral and central agglomeration of the nuclei and a few lymphocytes. In the upper corium, which was somewhat edematous, there was also a marked infiltration of epithelioid cells and lymphocytes, the latter in greater proportion than in the deeper layers. This infiltration was rather diffuse and appeared to bear no definite relation to the blood vessels, which were dilated throughout.

With the Weigert stain, with the exception of the papillary areas, there was almost a complete absence of elastic tissue fibers, although a few might be seen here and there in the midcorium.

A section from the annular lesion on the finger, about one year old, was stained with hematoxylin-eosin. The epithelium was normal. The upper and middle upper corium was made up of dense fibrous tissue with a slight perivascular lymphocytic infiltration. It gave the appearance of being scar tissue. In the lower middle and deep corium there was an edematous area in which the collagen fibers were fragmented, their place largely taken by a bluish-red tinged granular mass. In and about this area were many epithelioid cells and a few lymphocytes.

With the Weigert stain, the elastic tissue fibers were not present in the dense fibrous tissue previously described or in the lower infiltrated area.

Course.—One week after these biopsies were taken, all the papular and annular lesions were distinctly flatter, but the erythematous lesions on the forehead and cheek were unchanged. During the next three months, the patient received increasing doses of old tuberculin subcutaneously. The erythematous lesion on the cheek completely disappeared, that on the forehead became considerably lighter in color, and the papular and annular lesions became flatter but did not involute completely. At no time during the period of observation was the presence of papular or annular lesions observed in the erythematous areas on the forehead and cheek.

Case 2.—Mrs. J. S., aged 53, a Jewess, born in Poland, was first observed on Sept. 25, 1930. The disease had begun five years before with the appearance of lesions on the back of the neck and had gradually extended in the next two years to the hands, chest and over the mastoid regions. During the past three months both temples became involved, and the forehead had partly assumed a reddish color. During the past four years numerous types of treatment had been given, including injections of gold compound intravenously and roentgen therapy. Under the latter, some of the lesions had involuted temporarily but recurred within a few months. The patient's past history was otherwise irrelevant.

Examination.—On the dorsum of the right hand was a palm-sized lesion, the center of which was smooth and slightly erythematous, and the outer half somewhat atrophic. The periphery had an irregular serpiginous shape and was composed of numerous slightly raised pinkish papules, most of which had fused with one another to form a continuous line 2 mm. wide, raised 1 mm. above the surface of the skin; the latter was infiltrated and firm to the touch and had a dull yellow color when the skin over it was tensed.

On the dorsum of the left hand was a lesion somewhat smaller but similar in appearance to that on the right, except that the border was much flatter.

On the right forearm were numerous single pinhead-sized and slightly larger, erythematous infiltrated papules and three annular lesions, each about 4 mm. in diameter, with an infiltrated border and a central slightly depressed reddish area.

In the upper sternal region was an area 5 cm. in diameter, composed of discrete, reddish, infiltrated, raised papules, each about 2 to 3 mm. in diameter, and showing no tendency to fusion or the formation of annular lesions.

Over the base of the back of the neck were several annular lesions and numerous discrete papules similar to those already described (fig. 2).

Almost the entire left side of the forehead was occupied by an erythematous area, which was only slightly infiltrated. Under pressure with a diascope, the erythema completely disappeared. There were no papular lesions in this area, but in the left temple region the erythematous zone gradually merged into an

area where there were numerous small, discrete papules on an erythematous background. The right temple region showed similar papular lesions.

Laboratory examinations gave the following results: The Wassermann reaction of the blood was negative. The urine was normal. The blood count showed: red blood cells, 4,360,000; hemoglobin, 100 per cent; white blood cells, 6,840; polymorphonuclears, 42 per cent; lymphocytes, 56 per cent, and mononuclears, 2 per cent. Chemical examination of the blood showed: uric acid, 3.33; urea nitrogen, 18.7; sugar, 103, and sodium chloride, 462. Intracutaneous injection of 0.0001 Gm. of tuberculin resulted in a strongly positive reaction.

Microscopic Examination.—Biopsies were taken from the lesions on the right hand, chest and forehead. A section taken from the old annular lesion on the hand was stained with hematoxylin-eosin. The epidermis was normal. In the midcorium was an acellular edematous area containing a bluish-staining material

Fig. 2.—Annular and papular lesions on the hands and neck.

arranged in the form of fibrils and granules. About this area and scattered through the midcorium were numerous epithelioid and lymphocytic cells. The blood vessels were dilated throughout.

A section from the old papular lesion on the chest was stained with hematoxylin-eosin. This section showed much the same picture as that of the lesion on the hand, differing only in the fact that the lesion on the chest showed a larger number of epithelioid cells and in addition a few giant cells of the Langhans type.

With the Weigert stain, elastic fibers were absent in the degenerated and infiltrated areas.

A section from the erythematous area on the forehead was stained with hematoxylin-eosin. The epithelium was normal. The principal changes were present in the midcorium and deep corium. Here there was an area where the collagen fibers were fragmented and partly replaced by a bluish-staining granular mass.

There was marked cellular infiltration, consisting chiefly of epithelioid cells, a few giant cells with both central and peripheral agglomeration of the nuclei and a few lymphocytes (fig. 3).

With the Weigert stain, the elastic fibers were thickened in the upper corium and missing in the infiltrated area.

It is apparent from the foregoing descriptions that all the lesions showed similar microscopic pictures.

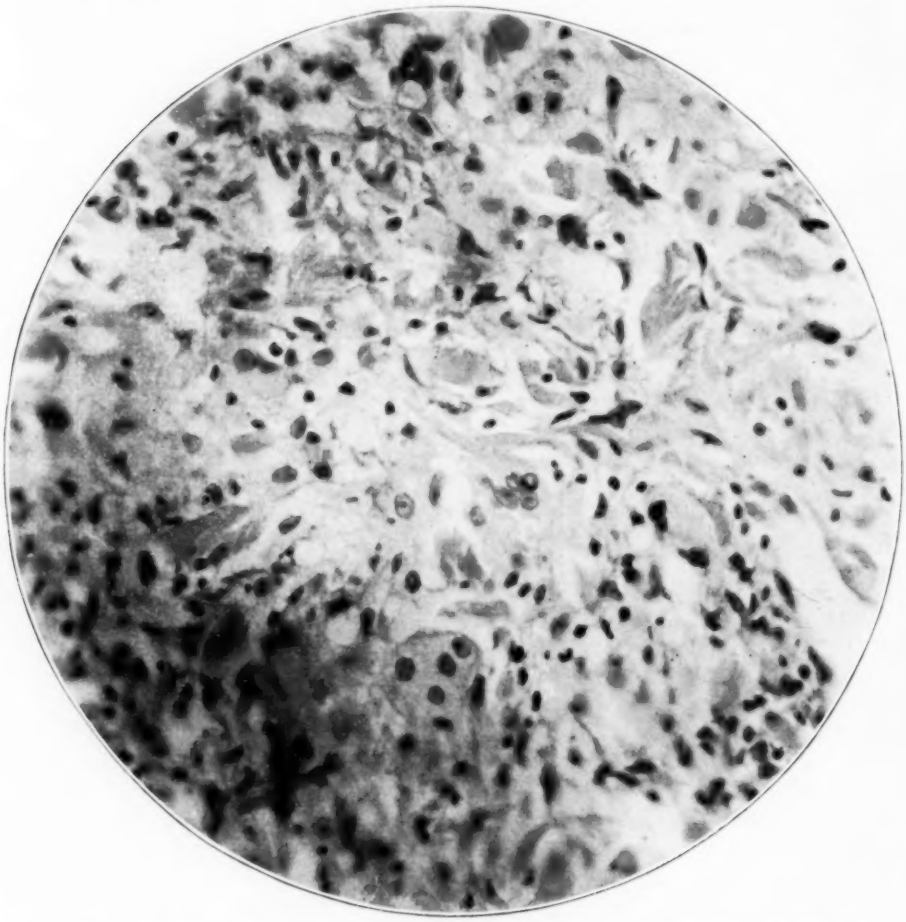

Fig. 3.—High-power photomicrograph of erythematous area on forehead in case 2. The section is taken from the midcorium and shows epithelioid cells and a giant cell.

Course.—No treatment other than the use of ointment of boric acid was given the patient for the next month. When observed at the end of that time all the lesions on the hand, chest and neck were distinctly flatter. The erythema on the forehead was lighter in color, and there had had been some running together of the previously discrete papules on the chest, producing irregularly curved flattish lesions. Ointment of boric acid was again prescribed.

The patient was seen two weeks later. During the previous week numerous discrete, erythematous, slightly raised papules, pinhead-sized and slightly larger, had appeared on the left forearm. A biopsy of one of these showed a microscopic picture similar to those already described.

For the next two months the patient received subcutaneous injections of old tuberculin, beginning with a dose of 0.000001 Gm. The latter injection produced an infiltrated area in the skin which persisted for a period of two weeks. After seven injections, the last of 0.001 Gm., there was complete involution of all the lesions, including the erythematous lesion on the forehead.

SUMMARY OF THE CASES

In both cases, typical annular lesions of granuloma annulare were present on the hands for a period of from three and one half to four years. In addition, in one case, discrete papular lesions were present for about the same length of time on the chest, neck and forearm. After these lesions had persisted with some improvement and remission under various types of treatment, including the x-rays, erythematous areas, slightly, if at all, infiltrated, developed on the forehead. Within a comparatively short time thereafter, about four months or less in these cases, showers of pinhead and slightly larger papular lesions on an erythematous background appeared on the forearms, over the mastoid regions and also on the chest in one case. In addition, in the latter case, an erythematous area, similar to that observed on the forehead, appeared on the face near the angle of the mouth. No papular or annular lesions were observed in the erythematous areas during the five months that the patients were followed. Biopsies of all the lesions showed changes in the corium similar in character, namely, the presence of cellular and acellular areas showing basophilic and granular degeneration of the collagen fibers and an infiltration composed mostly of epithelioid cells, a few giant cells and some lymphocytes.

Intracutaneous tests with 0.0001 Gm. of old tuberculin were positive in both cases, and a subcutaneous injection of 0.000001 Gm. gave a positive result in one and a negative in the other. Guinea-pig inoculations with tissue from the erythematous lesion on the forehead in case 1, and from a papular lesion on the back of the neck in case 2, were negative for tuberculosis. Sections of the foregoing tissues were stained for acid-fast bacilli with the Klingmuller modification of the Ziehl-Neelsen stain with negative results.

COMMENT

Vignolo-Lutati,[6] in 1912, described an erythematous area in conjunction with a lesion of granuloma annulare. The patient had had

6. Vignolo-Lutati: Beitrag zum Studium des sogenannten "Granuloma annulare," Dermat. Wchnschr. **54**:77, 1912.

an annular lesion on the dorsum of the left hand for a year. On the dorsum of the first phalanx of the middle finger of the same hand, there was an erythematous area 1 cm. in diameter at the same level as the surrounding skin. The latter lesion was only slightly infiltrated, its color disappearing on pressure with a diascope; it had been present for two weeks. Vignolo-Lutati followed the case for three months and noted central paling and peripheral extension with slight increase of the level of the periphery above that of the surrounding skin. No biopsy of the lesion was taken.

Gougerot and Arnaudet [7] also described an erythematous area on the back of the hand in a case which had also typical annular lesions. The erythematous area was about 4 mm. in diameter, was not infiltrated and contained no papules. It had appeared overnight and within a week had become a typical annular lesion of 6 mm. diameter.

The foregoing cases showed only small erythematous areas which gradually became converted into annular lesions. In those that I have described, the erythematous zones were considerably larger and over a period of five months showed no tendency toward the development of papular or annular lesions. Whether or not the treatment with tuberculin inhibited their development, I am unable to say.

Discrete nodular or papular lesions without any of the annular type are not uncommon in granuloma annulare. Stillians [8] reported a case with such lesions and mentioned among others who have made similar observations, Dalla-Favera, Hartzell and Middleton. I have, however, failed to find any mention of a rapid dissemination of the diseased process as evidenced by the appearance of a shower of discrete papular lesions as occurred in the cases here reported. For this type of granuloma annulare the name of "granuloma annulare disseminatum" is proposed.

One may explain this dissemination of the lesions as due either to a diminished resistance of the organism to the causative agent or its toxin, or to an increased sensitization of the skin to the same factors, analogous to the production of tuberculids.

NOTE.—Since writing this paper my attention has been called to a case reported by Olah.[9] The patient was an undernourished woman, aged 29, with undoubted pulmonary tuberculosis, who showed the presence in successive crops of numerous follicular lesions which united to

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7. Gougerot and Arnaudet: Granulome annulaire ou mieux tuberculose annulaire guéri par la tuberculine, Arch. dermat.-syph. de clin. d. hôp. St. Louis **2**:307, 1930.

8. Stillians, A. W.: Granuloma Annulare, J. Cutan. Dis. **37**:580, 1919.

9. Olah, D.: Beiträge zur Pathogenese des Granuloma annulare, Dermat. Wchnschr. **84**:389, 1927.

form ringed and circinate figures. Histologically, the lesions were tuberculoid in structure with the changes limited principally to the follicular areas. Olah considered his case to be one of generalized granuloma annulare. As the lesions of granuloma annulare are not primarily follicular in nature, the diagnosis is open to question. It is not at all unlikely that he was dealing with an unusual type of tuberculid.

853 Seventh Avenue.

PITYRIASIS LICHENOIDES ET VARIOLIFORMIS ACUTA

REPORT OF A CASE *

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A married woman, aged 35, came to my clinic at the Manchester Skin Hospital in August, 1929, during my absence, and was seen by an assistant, who naturally

Eruption on the trunk and arms.

made a diagnosis of secondary syphilis. The Wassermann reaction was negative, and the rash increased in intensity and area in spite of vigorous antisyphilitic treatment. When I saw the patient on my return, I found that she presented on the trunk and flexor aspects of the arms a maculopapular eruption that simulated in a marked degree a maculopapular syphilid. Her general appearance, however, was that of a perfectly healthy person. There was no general adenitis, headache

* Submitted for publication, April 27, 1931.

or other symptom suggestive of venereal infection. The patient said that she had had a sore throat shortly before the eruption appeared, and in the left cervical region some enlarged lymphatic glands could be appreciated. The fauces showed slight congestion.

I admitted her for further observation and showed her to my colleague, Dr. Gibson, who made the diagnosis of pityriasis lichenoides et varioliformis acuta, in consequence of his having seen similar cases demonstrated at the Royal Society of Medicine.

A detailed description of the lesions would only be a repetition of the reports of cases already recorded. The photograph, I think, speaks for itself. An early lesion was excised, and the biopsy revealed a picture identical with those of Senear and Oliver.

The rash was entirely unaffected by treatment. It lasted for six months and eventually disappeared quite suddenly, leaving tiny pitted scars.

PEMPHIGUS

RECOVERY FOLLOWING LONG-CONTINUED COLONIC IRRIGATIONS AND ARSENIC BY MOUTH *

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There is much that is unknown about pemphigus as regards both cause and treatment. The therapeutic results that have been reported from time to time have led to confused conclusions, largely because the disease runs a variant course in different people and peoples. Sufficient stress has not been placed on what might be called racial susceptibility.

Pemphigus, as it is seen in the United States, is dominantly a disease of Jews of Eastern European birth. In my experience I have seen pemphigus but once in a Jew of American birth, whereas I have seen scores of cases in Russian, Galician or Polish Jews. What is more significant is that it is almost always fatal in such persons. I have seen only one recovery, and this case will be referred to. And this is virtually the experience of other dermatologists in the large cities of the East, where there is a considerable foreign population. It may therefore be laid down as a fact that Jews of Eastern European birth are peculiarly susceptible to this disease, and that when they contract it there is little hope of recovery.

No one knows the cause of pemphigus, but there is great reason to believe that it is an infection in which the organism gains entrance into the blood stream.

A large number of recoveries have taken place in non-Jews under various treatments, but it must be recognized that, as a rule, the disease is less malignant in them. There is no assignable reason for the morbidity and fatality of pemphigus in Eastern Jews. This offers a fertile field for study.

I wish to report a complete recovery from pemphigus in a Russian Jew, in whom the disease had advanced to such a degree that he was almost in extremis. Indeed, it was thought that his death was only a few days off. The history is as follows:

REPORT OF CASE

N. S., a man, aged 48, born in Russia, entered the Graduate Hospital of the University of Pennsylvania on Dec. 5, 1927, suffering from a bullous and pustular eruption.

* Submitted for publication, April 17, 1931.

History.—The parents were dead, from an unknown cause. One brother died of influenza. One sister was living and well. There was no history of tuberculosis, carcinoma, cardiorenal diseases or diabetes in the family. Four children were living and well. One child was dead, from an unknown cause. The patient's wife had had no miscarriages. The patient gave no history of childhood diseases, scarlet fever, diphtheria, typhoid fever, rheumatic fever, pneumonia or tonsillitis. He had had a cough every winter for the past five years.

Present Condition.—The onset was about five weeks before examination, with needle-like pain in the mouth, which came to his attention while he was eating breakfast. Any kind of food caused pain; even milk aggravated the condition. He consulted a doctor who applied some medicine to the sore spots in the mouth. Since then, he had been able to take only milk; other food caused marked pain. He was under the treatment of his private doctor for two weeks and then came to the clinic at the Graduate Hospital.

The present eruption on his body began about two weeks before his admission to the clinic. He first noticed a "blister," containing pus, below the right scapula. A few days later two more lesions of the same kind developed at the back of the neck, followed in three days by a group of pustules on the back. About eight days before his admission several pustules developed on the medial surface of the left thigh.

He said that the lesions started with areas of redness of varying size, simulating the bite of a mosquito. The redness increased in size and in two or three days the lesion contained pus. He did not think that it ever contained clear fluid. Before the formation of pus, the lesions were painful. Chills and fever were not present at any time. The bowels were usually constipated, a movement occurring every two or three days. The appetite was good, but the patient was afraid to eat because of the pain. In November, 1927, the patient weighed 133 pounds (60.3 Kg.); he now weighs 128 pounds (58 Kg.). Previous to November, he had never weighed himself.

Physical Examination.—General: The patient was small and slightly undernourished. There were a few discrete, scattered, broken-down blebs, some containing pus, on various parts of the body; on the thorax anteriorly and posteriorly, on the inner aspect of the upper part of both thighs and on the arms. The eruption did not seem to have any special area of predilection, and the lesions did not occur in groups but were discretely scattered. On the lower third of both thighs, there were tiny pinkish elevated papules, having the appearance of vesicles in their early formation. The broken-down blebs containing pus had an area of redness around them which was not sharply defined. Similar lesions were also seen on the back of the neck and in the nares.

Head: The pupils were equal and reacted to light and in accommodation. There was no discharge from the eyes or ears. There were excoriations in the nares at the opening. No weakness of the ocular muscles was noted. The cervical glands were enlarged to the size of a bean. There was no abnormal pulsation or mass present in the neck. There were white plaques of thickened mucous membrane on both sides of the cheek. There were many areas of excoriation on the roof of the palate. The pharynx was congested, and the tonsils were slightly enlarged.

Chest: There was a deformity tending toward kyphosis, with a distinct hollowing in of the sternum. The chest wall was increased in its anteroposterior diameter—the barrel-chested or emphysematous type. The percussion note was resonant

Fig. 1.—Pemphigus during the process of healing of the cutaneous lesions.

Fig. 2.—Pemphigus, showing the extent of the eruption on certain areas.

anteriorly, with slight dulness over the left apex posteriorly. The percussion note was modified on both sides at the level of the spine of the scapulae. The tactile and vocal fremitus was diminished at the areas of modified resonance. The breath sounds were harsh and rather granular in character, particularly the inspiratory murmur. There was slight prolongation of expiration over the left apex anteriorly. A few occasional râles were heard at the bases of the lungs. The heart sounds were of good quality (pulmonic and aortic second sounds). No murmurs were heard.

Abdomen: The abdomen was soft and the muscles were slightly resistant on palpation, with no tender spots. The left colon was palpable. The spleen and liver were not palpable.

Extremities: The knee jerks were present and the plantar reflex was active. There was no Babinski sign or ankle clonus, and no paralysis of the muscles.

Laboratory Reports.—On Feb. 7, 1928, the urine was amber and tests showed: alkalinity; specific gravity, 1.022; albumin, plus 2; calcium oxylate present; otherwise negative results.

A blood count on Jan. 16, 1928, showed: erythrocytes, 4,770,000; leukocytes, 8,000; hemoglobin, 86 per cent; small lymphocytes, 32; large lymphocytes, 5; polymorphonuclears, 60; eosinophils, 2, and transitionals, 1. Chemical examination of the blood on January 26 revealed: sugar, 97 mg., and urea nitrogen, 13 mg. The bleeding time was 1 minute; the clotting time, 3½ minutes; the blood was type II. The Wassermann and Kahn reactions of the blood were negative. The chlorides amounted to 464 mg.

Roentgen Report.—On January 26, the following report was made: "Scoliosis of dorsal spine to left. Prominent trunk and hila on both sides due to fibrosis with old tuberculous lesions at both apices and thickened pleura of right lower lobe. Patient to return for fluoroscopic study."

The patient's condition gradually became worse, blebs appearing on various parts of the body. By January 28, his condition had become so bad that a blood transfusion was carried out, 300 cc. of citrated blood being infused. On February 10, 250 cc. of blood was again transfused. These had no favorable effect on his condition. Other treatment carried out was as follows: On February 2, mercurochrome-220 soluble, 4 mg. per kilogram (in 25 cc. of distilled water), was injected, with no benefit. Later, 50 cc. of antistreptococcic serum was given subcutaneously. Quinine in 5 grain (0.324 Gm.) doses was tried. The intravenous injection of 0.2 Gm. of neoarsphenamine was employed. Iron cacodylate was injected; the lesions were covered with wet dressings of potassium permanganate. By February 26 the patient had become much worse and had a septic temperature. His condition was so bad that death was anticipated in a few days, and the relatives decided to take him home.

I saw him later in a bad condition, and living in a wretched hygienic environment. I prescribed from 3 to 5 minims (0.185 to 0.308 cc.) of a solution of potassium arsenite three times a day, and ordered him to receive colonic irrigations of 8 gallons (30.2 liters) of water three times a week. A female cousin, who was a sort of handy nurse, carried out this treatment. In the course of several months he improved considerably and in nine months he was free from lesions. He was much emaciated and had false ankylosis of the knee joints. Gradually this disappeared on forced motion, and the patient progressively took on weight. He has now been well for more than a year. His recovery is little short of miraculous.

Another patient was seen in consultation in a distant city. This man, over 50 years of age, was a Jew of Eastern European birth, and had a severe pemphigus which had resisted arsenic and other methods of treatment. After six weeks of treatment he is greatly improved and contemplates leaving the hospital shortly. The treatment consisted of colonic irrigations and the internal use of acetarsone (stovarsol) in broken courses.

Acetarsone has been used quite a little in pemphigus recently in German speaking countries, with some degree of success. Its value must be determined by further trial.

The treatment prescribed for my patient was solution of potassium arsenite, 5 minims three times a day, and colonic irrigations of 8 gallons of water three times a week. This was kept up for months. Meat, fish, fowl and eggs were excluded from the diet.

The question arises: To what extent was the cure due to the arsenic? There are cases in which arsenic has brought about recovery, but in my personal experience arsenic has never controlled pemphigus in Russian Jews. I have, however, heard of the recovery of two patients under such treatment.

I am much more inclined to the belief that the cure was in large part due to the colonic irrigations. Indeed, the reason why I instituted the colonic irrigations was a cure in a malignant case in a Jew, some years ago, personally narrated by Dr. John C. Hemmeter of Baltimore. The patient had been treated with arsenic over a long period of time by many dermatologists without being benefited. Dr. Hemmeter treated him with colonic irrigations for one year and cured him, without the use of arsenic.

The favorable result in these two cases suggested to me the thought that possibly pemphigus was due to an alimentary infection. In our Research Institute my co-workers and I fed a monkey on the excrement of a pemphigus patient which was mixed with banana pulp. We also cultivated a number of intestinal bacteria from the pemphigus stool and fed these to monkeys. The results were entirely negative.

I am prompted to publish the foregoing data in view of the high mortality from pemphigus in Eastern European-born Jews, the recovery in two such cases under a novel method of treatment, and the marked improvement in a third case. Only future study will determine whether this method of treatment has special merit.

Abstracts from Current Literature

EDITED BY DR. HERBERT RATTNER

THE OSSEOUS LESIONS OF CONGENITAL SYPHILIS. STAFFORD MCLEAN, Am. J. Dis. Child. **41**:1411 (June) 1931.

In summarizing his series of excellent articles on the bony lesions of congenital syphilis, McLean points out that the clinical manifestations in 55.8 per cent of the cases may be classified as severe, in 27.6 per cent as moderate and in 16.6 per cent as masked. Careful clinical scrutiny would have established the diagnosis in the first two groups (83.4 per cent), while in the last group the combined aid of the roentgen and laboratory data was indicated.

In about 72 per cent of the cases, the patients were in the first three months of life, and 90 per cent were not over 6 months of age. In ninety-five of ninety-six cases in which a blood test was performed, the reaction was positive; in the remaining case, the blood was anticomplementary, although proved syphilitic at autopsy.

The tibia was involved in 96.8 per cent of the cases, and the ulna in 96.7 per cent, and with diminishing frequency, the radius (91.3 per cent), the femur (79.1 per cent), the humerus (73.8 per cent) and the fibula (71.9 per cent). Osteochondritis was the most common bony lesion, occurring in 90.2 per cent of the cases; periostitis occurred in 70.6 per cent and osteomyelitis in 46 per cent. Osteitis was comparatively rare, occurring in only 6.8 per cent of the cases.

N. P. ANDERSON, Los Angeles.

ACTIVATED ERGOSTEROL IN RADIATION SICKNESS. LESTER A. SMITH, Am. J. Roentgenol. **22**:317 (Oct.) 1929.

The clinical picture of radiation sickness may be (1) immediate, consisting of malaise, loss of appetite, headache, vomiting, fever, diarrhea or acute prostration, or (2) late, with nausea, abdominal pain and distention, fever, diarrhea, general weakness and fatigability or even cachexia. The theories are: (1) toxemia from broken-down proteins or lecithin lipoids, (2) a decrease in the cholesterol content of the blood, (3) a shift of the body chlorides, (4) an alkalosis and (5) an increased vagus tonus. The oral administration of activated ergosterol produced marked relief from all symptoms, except possibly the diarrhea. Used as a prophylactic, ergosterol prevents all symptoms to a marked degree, the same results occurring apparently in both radium and roentgen treatment. Many of the patients experience an unusual sense of well-being and increased appetite. The action is probably effected in some way through the calcium-phosphorus metabolism. There is some evidence that the final effect may be brought about through the prevention or reduction of hyperirritability of the vagus. A bibiography is appended.

STULIK, Chicago [AM. J. DIS. CHILD.].

A CLINICAL APPRAISAL OF SYPHILOPHOBIA. ROBERT L. GILMAN, Am. J. Syph. **15**:295 (July) 1931.

Syphilophobia is defined as a disproportionate, morbid dread or fear of syphilis in those who are unaffected as well as in those who are actually syphilitic. The majority of syphilophobiac persons are men.

The report consists chiefly of psychoanalytic case studies of syphilophobiac persons who are nonsyphilitic, questionably syphilitic or frankly syphilitic.

True syphilophobia always has the background of a deepened introspectiveness, and is generally accompanied by a heightened interest in pseudomedical literature.

Other factors operating are overwork, worry, the occurrence of a single or partially positive serologic test, self-reproach with heightened moral sense following a sexual encounter, the reading of an unscrupulous quack's pamphlets or the submission to his treatment and finally the underground dissemination of lay legends regarding syphilis and its venereal character.

In the way of management, the syphilophobiac person is entitled to an evaluation of his fears and a complete clinical and serologic investigation. In the absence of any real introspection, the simple statement as to the absence of syphilis will suffice to end the phobia. In other instances, along with this, proper guidance of reading habits will be necessary. Unfortunately, this will not suffice for the true introspective person who has a warped psychic malbalance, and therefore a final happy result can come only from within the patient following tireless management by a sympathetic physician.

In the syphilitic patient, the logical time to prevent syphilophobia is at the initial discussion between the physician and patient after the diagnosis has been established. As observation is so often necessary for the syphilophobiac person with questionable syphilis, the patient is often disappointed and goes from doctor to doctor until he finds a physician who will give him the antisyphilitic treatment that he craves. It is often permissible for a conscientious physician to treat this type of patient immediately with placebo preparations in an effort to cure the syphilophobia, while at the same time he evaluates carefully the question of syphilis.

It is believed that proper propaganda will not increase the number of syphilophobiac persons, but rather that it will tend to lessen the incidence, albeit the inherent receptiveness of such persons will grasp at the next available morbid condition that is most shrouded in mystery and ignorance.

THE ANTISYPHILITIC ACTION OF THE MALARIAL PARASITE IN OTHER THAN CENTRAL NERVOUS SYSTEM SYPHILIS. C. C. DENNIE, H. M. GILKEY and S. F. PAKULA, Am. J. Syph. **15**:320 (July) 1931.

The purpose of this paper is an attempt to prove that malaria, when given to the syphilitic human organism, has a definite antisyphilitic action, no matter where the process is located.

Four cases of interstitial keratitis, one case of hyperplastic bone disease, one of joint disease and one of malignant skin disease in which malaria treatment was given are reported.

In early acute interstitial keratitis the results were excellent. In hyperplastic osseous syphilis the action of malarial therapy was apparently very decided, for the superimposed bone quickly disappeared. In cases of perarticular infiltration of the knee joint, the hyperplastic tissue disappeared and function was restored. In resistant malignant syphilis of the skin in which all other methods had failed, remarkable recovery was secured in a short time. In two cases of resistant syphilis of the skin in which the lesions disappeared with malarial therapy, a slow recurrence of the cutaneous manifestations occurred in a few weeks.

The probable mechanism of malarial therapy, based on the work of Bahr and Breutsch, is discussed. There is also a discussion regarding the modus operandi in interstitial keratitis, and a theoretical explanation is given for the effectiveness of malarial therapy in this disease. This work opens a new field for investigation regarding benefits to be derived from malarial therapy.

APLASTIC ANEMIA OCCURRING DURING THE TREATMENT OF SYPHILIS WITH THE ARSPHENAMINES. D. J. STEPHENS, Am. J. Syph. **15**:333 (July) 1931.

The condition is rare. The 2 cases reported are the only ones recorded at the Strong Memorial and Rochester Municipal hospitals during the past five years among 45,000 hospital admissions and during the course of 14,000 injections into 1,200 patients.

The number of injections and the total amount of the drug injected seem to have no relation to the occurrence of the condition. Neoarsphenamine, according to the author, is more apt to produce this type of reaction than the other arsenicals.

In one of the cases reported, aplastic anemia developed after the use of sulpharsphenamine. This lends further weight to the argument for discontinuing the use of this drug, which seems to have a selective action on the blood-forming organs.

Bone marrow depression following the use of the arsphenamines is probably due to the toxic action of the drug or its closely allied derivatives on the marrow of a susceptible person rather than to the action of either the arsenic or the benzene radical of the molecule.

FURTHER STUDIES ON THE WASSERMANN REACTION IN JOINT FLUID. D. H. KLING and J. PINCUS, Am. J. Syph. **15**:376 (July) 1931.

The observation of a rigid technic is emphasized. The most important points are: the inactivation of the fluid for from fifteen to thirty minutes, the use of clear, nonhemolyzed fluids and a rapid procedure in order to carry out the reaction as soon as possible. Further steps are identical to those carried on in the technic for Wassermann tests of the blood.

The reaction was carried out in a series of 150 cases of acute and chronic, syphilitic and nonsyphilitic arthritis. It was found to be positive in 16 cases and negative in 134 cases. Of the 16 cases giving positive Wassermann reactions, the condition in 10 was diagnosed as syphilitic arthritis. The reaction was found to run parallel in the joint fluid and in the blood. The reaction by itself cannot be regarded as conclusive proof for the diagnosis of the syphilitic nature of a given case of arthritis, but it serves as a valuable link in the chain to build up a differential diagnosis. The final conclusion as to diagnosis is reached by the coordination of other evidence and the effect of antisyphilitic therapy. Routine Wassermann tests should be done on every aspirated joint effusion.

RECENT DEVELOPMENTS IN THE SEROLOGY OF SYPHILIS. J. A. KOLMER, Am. J. Syph. **15**:383 (July) 1931.

According to Kolmer, Eagle has brought forth evidence to show that there is a specifically altered fraction of the serum globulin that is responsible for the precipitation and complement-fixation reactions. Kolmer states that in view of this physiochemical nature of both reactions, it is to be expected that in the conduct of the flocculation and complement-fixation tests it will be impossible to render the factors exactly the same, and for this reason discrepant results are bound to occur.

The serology of syphilis is best served at present by conducting both flocculation and complement-fixation tests with all serums.

Complement-fixation and flocculation procedures, despite technical improvements in the past several years, are still capable of yielding falsely negative reactions. Further increase in sensitiveness, while desirable, should be carried out only so far as is consistent with specificity.

A STUDY OF THE WASSERMANN REACTION IN PREGNANCY AND EARLY INFANCY. F. A. HEMSATH, Am. J. Syph. **15**:396 (July) 1931.

This study concerns tests on 6,800 admissions to the antepartum clinic of the New York Lying-In Hospital during a period of twenty-one months. The incidence of positive reactions as calculated from the results of tests on 4,500 pregnant women, 13 per cent of whom were Negresses, was 4 per cent, a total of 179 cases. The incidence for white patients was 2.5 per cent, and for Negresses, 12 per cent.

The only instance of a spontaneous change to a negative serology following delivery among 140 positive cases that were retested on the seventh day post partum occurred in a case that had shown fixation only with noncholesterolized antigens. Two cases per thousand showed anticomplementary reactions.

Tests on infants at the age of 7 days showed close agreement with the maternal blood tests and the cord blood tests. Subsequent tests on 30 of these infants when 1 month of age showed that 50 per cent of them had negative Wassermann reactions although untreated.

No evidence was found to justfy the conclusion that a positive Wassermann reaction, confirmed by repeated tests, should be subject to any different interpretation in pregnant than in nonpregnant women.

A Comparison of the Kline and Wassermann Tests in Primary Syphilis. L. Chargin and T. Rosenthal, Am. J. Syph. **15**:405 (July) 1931.

In primary syphilis with a positive dark field, the Kline test was positive in 52 per cent, and the Wassermann test in 32 per cent, a percentage of 20 per cent in favor of the Kline test.

However, in 100 consecutive examinations of persons in whom the authors believed syphilis could be definitely excluded, the Kline test gave a false positive reaction in 17 per cent. The Wassermann reaction did not prove false in a single instance in this series. Because of this, the authors conclude that complete reliance cannot be placed on the Kline test in its present form, and are in accord with the existing method of using more than one type of test in the study of suspected syphilitic serums.

Reuter, Milwaukee.

Traumatic Industrial Cancer. Ira I. Kaplan, Ann. Surg. **94**:213 (Aug.) 1931.

In reviewing the incidence of industrial causes in cases of cancer studied in the division of cancer, department of hospitals, city of New York, the author feels that those due to the action of x-rays are the only ones that can be definitely attributed to occupation. For the most part, the essay is composed of a group of brief case records and speculative consideration as to the relation of the malignancy and the occupational factors in each, the latter consisting in most instances of direct trauma of various types to the sites of subsequent malignant degeneration. The views of others, notably Ewing, Knox and Mock and Ellis, on the subject of the relation of trauma and malignancy are quoted.

L. M. Wieder, Milwaukee.

The Nature and Etiology of Pollen Dermatitis. A. Brown, E. L. Milford and A. F. Coca, J. Allergy **2**:301 (July) 1931.

Pollen dermatitis has been thought to be due to the atopic excitant present in the pollen. On the basis of a study of two cases and of experimental work, the authors prove that the dermatitis is not due to the atopic excitant but to the pollen oil itself. Hypersensitiveness to pollen oil occurs in 15 per cent of subjects with hay fever and in about the same number of atopic persons who are not subject to hay fever and nonatopic persons. Pollen dermatitis is, therefore, a contact dermatitis similar to that due to poison ivy.

Caro, Chicago.

Argyria Following Excessive Use of Silver Arsphenamine. S. W. Becker and E. B. Ritchie, J. A. M. A. **97**:389 (Aug. 8) 1931.

Two cases of argyria are reported in men who had received injections of silver arsphenamine. Each patient received a number of injections, amounting to a total of more than 15 Gm. of the preparation.

Eczema Due to Lemon Peel. S. J. Fanburg and J. G. Kaufman, J. A. M. A. **97**:390 (Aug. 8) 1931.

The patient, who had a dermatitis on the hands, was employed by a beverage company to peel lemons by hand. Patch tests with lemon juice were negative, but with lemon peel they were positive

DERMATITIS MEDICAMENTOSA DUE TO EPHEDRINE. SAMUEL AYRES, JR., and N. P. ANDERSON, J. A. M. A. **97**:437 (Aug. 15) 1931.

Two cases of dermatitis medicamentosa due to ephedrine are reported. In each case there was also a localized dermatitis on the face from the use of a spray containing the drug. The generalized eruptions after the injection of the drug were erythematous, purpuric and edematous. Attempts at passive transfer by the Prausnitz-Kustner method were unsuccessful.

PROCAINE DERMATITIS. BART M. JAMES, J. A. M. A. **97**:441 (Aug. 15) 1931.

In the case reported procaine was found, by means of patch tests, to be the cause of a dermatitis involving both eyelids and the adjacent portions of the nose and cheeks. There was also conjunctivitis. The patient had used eye drops containing 1 per cent procaine.

ATROPINE DERMATITIS: AN UNUSUAL CASE ASSOCIATED WITH ERYSIPELAS. OTIS R. WOLFE and JOHN MCCLEOD, J. A. M. A. **97**:460 (Aug. 15) 1931.

A case is reported in which following the use of atropine in the eye there was intense swelling of the lids with involvement of the adjacent areas of the face, which had previously been the site of erysipelas. Some months previously the patient had applied to her back a plaster that caused a severe local reaction. It is thought that this was a belladonna plaster.

A NEW SKIN ERUPTION PRODUCED BY PHENOBARBITAL. M. G. PETERMAN, J. A. M. A. **97**:703 (Sept. 5) 1931.

Two cases are reported in which after prolonged use of bromides, lesions of bromoderma developed on the legs. Phenobarbital, in small doses, was then substituted for the bromides and the lesions cleared up. When the dose was increased to 0.75 Gm. twice a day, in each instance there developed granulomatous lesions, similar to those of bromoderma, on the sites previously involved.

DERMATITIS DUE TO RUBBER BUNION PROTECTOR. HENRY D. NILES, J. A. M. A. **97**:778 (Sept. 12) 1931.

A case is reported in which the use of a rubber bunion protector caused a localized dermatitis. Patch tests with the bunion protector were positive, but with other forms of rubber they were negative. The patient refused to allow tests to be made with the various constituents of the bunion protector.

THALLIUM ACETATE POISONING IN TREATMENT OF RINGWORM OF THE SCALP: REPORT OF TWO CASES. MORRIS GLEICH, J. A. M. A. **97**:851 (Sept. 19) 1931.

Two cases are reported in which death followed the use of thallium acetate for ringworm of the scalp. The patients were aged 7 and 5 years, and they were given the recommended dosage of 8 mg. per kilogram of body weight. They both became sick in two days with myelo-encephalic symptoms, and in one case there were respiratory symptoms. There is no mention in the reports of the previous health of the children nor were postmortem examinations made.

ZOSTER, HICCUP AND VARICELLA. W. D. W. BROOKS, Brit. M. J. **2**:298 (Aug. 15) 1931.

The patient, seen primarily for persistent hiccups, was found to have a herpes zoster on one leg, and a generalized varicelliform eruption. The skin lesions disappeared after the hiccups were checked. The cerebrospinal fluid, which showed fourteen cells per cubic millimeter and slightly increased globulin, was

injected into monkeys and rabbits, but gave negative results for an ultramicroscopic organism. The case is of interest in that it illustrates the relationship between zoster varicella and encephalitis on the one hand and hiccup and encephalitis on the other. The author is of the opinion that the whole chain of events was related by an infection to one virus.

PRURITUS ANI. W. P. MACARTHUR, Brit. M. J. **2**:334 (Aug. 22) 1931.

This paper is a consideration of the type of pruritus ani that is due to worms, Enterobius vermicularis. The pruritus is mainly nocturnal, worse when the patient is warmed, and disappears in the morning. A rectal washout administered when the pruritus is active will usually reveal the organisms. Immediate relief can be had by lavage with a solution of salt water, two tablespoonfuls of salt to a pint of water. Four ounces of the solution is sufficient for the injection.

SWIFT'S DISEASE. C. H. DICKINSON, M. J. Australia **2**:14 (July 4) 1931.

Two cases of Swift's disease are reported, and the etiology and treatment are discussed in detail. It is suggested that perhaps the condition is an aberrant form of poliomyelitis, or that it is due to a filtrable virus closely related to the virus of infantile paralysis.

AMMONIUM PERSULPHATE IN "YEAST FOODS" AS A CAUSE OF ALLERGIC DERMATITIS IN BAKERS. F. S. HANSMAN, M. J. Australia **2**:98 (July 25) 1931.

A study of four cases of baker's dermatitis indicated that the irritating substance in the dough was ammonium persulphate. The experiments consisted of patch tests, scratch tests and unsuccessful attempts at passive transference by means of the Prausnitz-Kustner method. It is thought that previous attempts to incriminate ammonium persulphate gave negative results because the experiments were not made with freshly prepared solutions. The eruption occurred in bakers who mixed the dough by hand.

RATTNER, Chicago.

RESEARCHES ON THE CUTANEOUS REACTIONS CALLED "ECZEMA OF NURSLINGS." H. MONTLAUR and MME. H. MONTLAUR, Ann. de dermat. et syph. **2**:737 (July) 1931.

The authors studied a group of nurslings afflicted with eczematous eruptions of various types—intertrigo, eczematid, generalized seborrheic eczema, etc. They were able to isolate an enterococcus in most of the patients (principally infants from 1 to 5 months of age), both from the stool and from the cutaneous lesions. They found, however, that they could also demonstrate enterococci in the intestinal contents and on the skins of healthy babies. It would therefore seem that this micro-organism, originating in the intestine and spreading to the skin, is normally innocuous but may under suitable conditions have its virulence exalted and become pathogenic, producing the various pictures seen, which might all be properly grouped under the title of "enterococcid," or an "enterococcic dermitis." It was simply a step further in this line of reasoning to attempt to treat the patients with an anti-enterococcic vaccine. This was done, the intradermal method being utilized, and all local treatment being suspended. The results were encouraging. Cure of the skin condition was often effected, together with an amelioration of concomitant digestive troubles in many. Sometimes there was an initial flare-up or extension of lesions followed by rapid improvement as the treatment was continued. This was interpreted as an allergic phenomenon. The majority of the patients required ten injections, though many needed fewer. Babies suffering from other cutaneous disorders, used as controls, were not benefited by the vaccine.

THE RATE OF ABSORPTION AND OF ELIMINATION OF "BISMUTH." N. YERNAUX, Ann. de dermat. et syph. **2**:761 (July) 1931.

In order to judge the therapeutic value of a given bismuth compound it is necessary to know: (1) the quantity of metallic bismuth in each injection, (2) the number of injections, (3) the interval between injections and (4) the duration and rate of absorption of the compound. Though one may control (1), (2) and (3), one cannot influence (4), which is dependent on several factors, as the chemical composition of the medicament, whether it is in aqueous or oily vehicle, the individual variations in absorption, etc. Therefore, the duration and rate of absorption must be studied individually for each of the bismuth compounds.

The author undertakes to show that both the absorption in the tissues and the elimination by the emunctories follow a decreasing geometric curve; in other words, the absorption and elimination are proportional to the quantity of bismuth present in the tissues. This is done by means of roentgen examination of the injected depot, and determination of the amounts excreted in the urine and feces. Working with an oily suspension of bismuth subgallate, he found that in eight weeks half of the primary depot was absorbed, that half of the remainder was absorbed in another eight weeks, and that this continued until the depot was no longer visible. These "divisionary periods" of eight weeks, or the time required for half of the bismuth depot to disappear, are characteristic of the absorption of bismuth subgallate in oil, and signify that the absorption is at all times proportional to the bismuth mass present in the depot.

Yernaux cites the work of several authors who have shown that the rate of elimination, as determined by periodic examinations of urine and feces, can likewise be represented by a decreasing geometric curve in the case of the following preparations: bismuth subgallate, bismuth metal in dextrose suspension, quinine bismuth iodide and a complex bismuth tartrate compound in oil suspension. Thus the authenticity of the curve of absorption is confirmed by a curve of elimination.

What is the practical application of this? The plotting of these curves on a graph enables one to compare the absorption rates of different bismuth compounds, and teaches several lessons. The more rapid the absorption the more intense is the therapeutic effect but the shorter its duration, and, conversely, the slower the absorption the less intense but more prolonged is its therapeutic activity. Doubling the dose of a given preparation doubles the therapeutic intensity without increasing the duration of absorption. In other words, it is the amount injected (and not the duration of absorption) that governs the therapeutic intensity.

The author favors bismuth subgallate in oil over all other bismuth compounds because it is completely absorbed, does not become encysted and is painless, its rate of absorption and elimination testifies to its therapeutic activity, and its elimination is equal through the kidneys and bowels, which lightens the burden on the kidneys.

The article is well illustrated.

THE INFLUENCE OF BALNEOTHERAPY ON THE PERMEABILITY OF THE CHOROID PLEXUS TO ANTISYPHILITIC AGENTS. W. M. WERZILOV, A. R. CHOUGAME and K. M. FREYDINE, Ann. de dermat. et syph. **2**:775 (July) 1931.

Using apes as experimental animals, these authors sought to determine the influence of sulphur baths on the penetration of the choroid plexus by antisyphilitic remedies. The animals were immersed in the baths (rich in hydrogen sulphide) following administration of the various drugs. The results may be summarized as follows: 1. Penetration of iodides and of mercury was greatly favored, large concentrations of each being recovered from the spinal fluid. 2. The same was true of bismuth, with the additional observation that the simultaneous use of bismuth and neoarsphenamine greatly augmented the penetration of bismuth into the spinal fluid. 3. In the case of neoarsphenamine, twice as much was recovered from the experimental animals as from the controls. No

exception to this was found in several hundred trials. 4. Bismuth and neoarsphenamine penetrated better than iodides. 5. Penetration of each drug was enhanced either by elevating the dosage or by increasing the concentration of hydrogen sulphide in the bath. The question was raised as to whether the effect was not partly due to inhalation of hydrogen sulphide. It was concluded that, while these procedures may not be readily applicable to man (because of toxic effects observed in the animals), they are deserving of further study as a possible improvement over existing methods of treatment for neurosyphilis.

PRURIGO NODULARIS; NODULAR LICHENIFICATION FOLLOWING PRURITUS HISTOLOGICALLY WITHOUT LICHEN PLANUS. H. GOUGEROT, J. MEYER and A. CARTEAUD, Bull. Soc. franç. de dermat. et syph. **38**:846 (June) 1931.

A woman, aged 38, presented on the extremities lesions of ten years' duration, during which time they had undergone practically no change. They were large, hemispherical, indurated nodosities, with a verrucous surface, and covered with a dry, grayish scale. Itching was intense. They were separated by normal skin, but many were surrounded by a zone of lichenification. Though typical lichen planus papules could not be found, the picture clearly suggested lichen obtusus (prurigo nodularis) with lichenification. Yet histologic examination revealed a total absence of any lichen planus structure. Another noteworthy feature was the surprising resistance of the lesions to therapy. The itching disappeared and did not develop again following roentgen therapy, but the lesions themselves promptly recurred even when destroyed by carbon dioxide snow and electrocoagulation.

It would seem that lichen obtusus and lichen corneus hypertrophicus constitute essentially a nodular lichenification, of which the initial symptom may be lichen planus papules, prurigo or simple pruritus.

PARAPSORIASIS IN PLAQUES AND GLOSSITIS RHOMBICA MEDIANA IN A SYPHILITIC PATIENT. MILIAN and DEGOS, Bull. Soc. franç. de dermat. et syph. **38**:850 (June) 1931.

In a patient with parapsoriasis in plaques and glossitis rhombica mediana the presence of latent syphilis was demonstrated. Could these conditions be syphilitic in origin? According to the authors, one is tempted to think so. The case of another patient is cited in whom the parapsoriasis lesions disappeared under antisyphilitic treatment.

TRISYNDROME. MILIAN and L. PÉRIN, Bull. Soc. franç. de dermat. et syph. **38**:852 (June) 1931.

A boy, aged 13, injured his knee, and a bullous impetigo supervened. Several days later a generalized eruption developed. It began with a suspicious herald plaque followed by the appearance of scaling macular and papular, papuloedematous and vesicular lesions. The last named were most numerous on the hands and fingers, resembling a true dyshidrosis. The general picture presented the features of both pityriasis rosea and parakeratosis psoriasiformis (psoriasiform seborrheic dermatitis). Culture of the vesicles yielded a streptococcus in long chains. The question is raised whether the three elements in this condition, streptococcic impetigo, pityriasis rosea and parakeratosis psoriasiformis, were not all due to the same streptococci.

BUCCAL PIGMENTATION AND PRURIGO NIGRICANS WITH HEPATIC INSUFFICIENCY. SÉZARY, E. COMBE and HOROWITZ, Bull. Soc. franç. de dermat. et syph. **38**:857 (June) 1931.

A patient, aged 62, presented a violently pruritic generalized eruption. The upper extremities, the back and the sides of the thorax and hips were the seat of

large erythematosquamous, pigmented patches, oozing in places, lichenified in others. The feet and the legs were entirely covered with similar plaques, cornified in areas, sharply demarcated near the knee, and a deeper brown. The latter had been present for six years, those on the body appearing two months ago. The development of pigmentation on the legs had been slow and insidious. The lips and buccal mucosae exhibited a slate colored, punctate pigmentation, and on the palate was a large melanotic patch. Histologic examination of the skin revealed abundant melanin pigment in the basal layer of the epidermis. The patient did not suffer from either asthenia, low blood pressure or any other symptom of Addison's disease. Through appropriate studies bronzed diabetes was ruled out, as were likewise tuberculosis and syphilis. On the other hand, there was incontestable evidence of hepatic insufficiency, due apparently to chronic alcoholism, to which derangement the authors attributed the syndrome found in this patient. The cutaneous aspects of the picture they denominated "prurigo nigricans."

A Case of Grave Syphilis: Resistance Predicted by the Leukocyto-Reaction. J. Gouin, A. Bienvenue, Daoulas and Pérès, Bull. Soc. franç. de dermat. et syph. **38**:860 (June) 1931.

The "leukocyto reaction," as originally announced by these authors, consists in a leukocyte count before and after autohemotherapy or injection of antisyphilitic drugs, syphilitic persons reacting with leukocytosis and nonsyphilitic persons showing leukopenia.

A case is presented to demonstrate that this test has a therapeutic as well as a diagnostic value. A patient who had been irregular in treatment had suffered relapses in various forms. It was decided to make a leukocyte count before and after the administration of several conventional antisyphilitic remedies. It was found that neoarsphenamine and bismuth appeared to produce leukopenia and mercury leukocytosis. From this it was deduced that the patient was resistant to neoarsphenamine and bismuth, and that one may therefore, by means of this test, predict the response or resistance to a given drug in a given patient.

A Case for Diagnosis; Giant Lichenification, Cutaneous Lymphoma or Mycosis Fungoides? C. Simon and Le Corre, Bull. Soc. franç. de dermat. et syph. **38**:872 (June) 1931.

A woman, aged 50, presented a diagnostic problem. She had suffered from a very pruriginous exfoliative erythroderma, with exacerbations and remissions, since infancy. At examination she showed an eruption covering the entire body, save the scalp. The lesions consisted of large plaques which were formed by the juxtaposition of rosy or yellowish, firm, flattened nodules, arranged in quadrilateral fashion. In some places these nodules were isolated and rounded, forming a tumor about the size of a small cherry. The axillary and inguinal glands were enlarged. The blood picture gave no clues. Histologic evidence was distinctive of neither a cutaneous lymphoma nor mycosis fungoides. It was concluded that the patient was the victim of purely a "giant lichenification."

Two New Cases of Mammillary Eminences on the Upper Incisors and Canines. Hissard, Bull. Soc. franç. de dermat. et syph. **38**:880 (June) 1931.

Two cases of congenital syphilis with dental dystrophy are reported, which, added to the four previously reported by the author, make six cases that he has found. This dystrophy consists in a tubercle of variable size situated on the upper canine and incisor teeth, separated from the teeth by a deep furrow. Hissard wonders whether this may not be proposed as another stigma of congenital syphilis. In the discussion, Lacapere considered it a debatable point, stating that in Morocco,

where at least 75 per cent of the population has syphilis, he found the percentage of incidence of this anomaly to be about the same as in France, where congenital syphilis is infinitely less common.

GANDY, Houston, Texas.

POIKILODERMA ATROPHICANS VASCULARE, JACOBI. PARDO-CASTELLO and G. LOPEZ, Bol. Soc. Cub., dermat. el sifil. **2**:207 (July) 1931.

A report is made of a case of Jacobi's disease in a young man, aged 26. The salient features of the case were the beginning of the condition as localized keratodermic points in the small joints of the hands and on the elbows and the progressive muscular atrophy. The cutaneous syndrome developed gradually into an apparently typical poikiloderma. Examination of the spinal fluid disclosed increased albumin, 31 cells per cubic millimeter and a syphilitic colloidal gold curve. At the time this report was made, the patient had been under observation for three years; the condition was growing steadily worse.

AUTHORS' ABSTRACT.

MÜLLER'S BALLUNGSREAKTION IN THE SERODIAGNOSIS OF SYPHILIS. PARDO-CASTELLO and CHEDIAK, Bol. Soc. Cub., dermat. el sifil. **2**:214 (July) 1931.

The technic of Müller's reaction is explained in detail. The Wassermann, Kahn and Müller tests were performed in 200 cases, with the following results: the Wassermann test gave 20 per cent positive reactions, the Kahn, 25.5 per cent and the Müller, 26.5 per cent. The latter serologic test is considered specific, easy to perform and very sensitive. It is particularly recommended for the examination of spinal fluid.

AUTHORS' ABSTRACT.

INTRADERMAL HEMOLISOTHERAPY. A. ZAVALA SAENZ, Rev. méd. latino-am. **16**:1482 (July) 1931.

The author reports his experiences with the method of autohemolysotherapy, a desensibilization procedure devised by Weissenbach and Rouget in 1930. The treatment consists in injecting into the derma a certain amount of the patient's own blood, aseptically obtained and treated with ether to produce hemolysis. About 0.3 cc. may be injected daily intradermally on the external surface of the thigh.

The author reports fifteen cases of eczema in which the patients were treated by this method, with excellent results in seven cases.

THE AMINO-ACIDEMIC CURVE AS AN INDEX OF LIVER FUNCTION IN SYPHILIS, LEPROSY AND SOME DERMATOSES. G. DEL VIVO, Gior. ital. di dermat. e sif. **72**:279 (April) 1931.

The author has investigated the amino-acid curve in the blood after intravenous injections of glycocoll, in order to establish the condition of the liver in regard to the nitrogen metabolism. The test was performed on ninety-one patients of whom forty-four were suffering from syphilis, eleven from leprosy and thirty-six from various dermatoses.

The amino-acid curve proved to be an excellent method of ascertaining the functional activity of the liver. In syphilis, the author found functional hepatic disturbance in all stages of the disease, even in the preserologic period, which shows how sensitive the hepatic cell is to the invasion of the Spirochaeta pallida. In leprosy, the great majority of cases showed a hypofunction of the hepatic cell. In cutaneous diseases, patients with eczema presented hepatic insufficiency, but this does not prove that the cutaneous disorder is directly due to hepatic dysfunction.

ERYTHEMA ANNULARE CENTRIFUGUM. GIUSEPPE SANNICANDRO, Gior. ital. di dermat. e sif. **72**:608 (June) 1931.

The author studies the question of similarity between erythema migrans chronicus, Lipschütz, and erythema annularis centrifugum, Darier, and describes

three cases of his own in which there are analogies to the clinical entities mentioned, although the evolution of the disease and the character of the individual lesions differ.

The first case is that of a woman, aged 27, who had an eruption of bullous, annular lesions originating in erythematopapular and sometimes in hemorrhagic patches of centrifugal evolution, limited to the head, arms and legs. The eruption relapsed at irregular intervals and was accompanied by febrile disturbance. The second and third patients suffered from an eruption of the lower extremities characterized by erythematous and erythematobullous lesions, spreading peripherally, receding at the center and surrounded at the edge by a crown of hemorrhagic papules. After healing, the lesions left an atrophic and depigmented scar. There was nothing characteristic in the histologic sections.

LICHEN SCLEROSUS AND LICHENOID SCLERODERMA. L. VERCELLINO, Gior. ital. di dermat. e sif. **72**:654 (June) 1931.

The author reports two cases of primitive lichen sclerosus and one of lichenoid circumscribed scleroderma. In the first two cases he could observe the appearance of elemental lesions that were atrophic from their beginning, which confirms the existence of lichen sclerosus d'emblée. In the third case the coincidence of a typical morphea with lesions of lichenoid scleroderma was observed, which made the differential diagnosis from lichen sclerosus possible.

ALTERATIONS OF THE CENTRAL NERVOUS SYSTEM IN THALLIUM POISONING. EMILIO CORTELLA, Gior. ital. di dermat. e sif. **72**:662 (June) 1931.

Thallium produces degenerative changes of the nervous cells and fibers. This article deals with lesions of the neuroglia, which are not as profound as those of the cells and fibers, perhaps because the neuroglia react slowly to toxic and inflammatory processes.

The author concludes that thallium, even in very small doses, produces disintegration of the nervous elements owing to direct action of the metal. He does not believe that thallium acts on the hair follicle to produce alopecia, but rather thinks that its action is through the central nervous system.

PATHOGENESIS OF PSORIASIS AND THE KÖBNER PHENOMENON. ITALO LEVI, Gior. ital. di dermat. e sif. **72**:669 (June) 1931.

After a review of the literature concerning artificially induced lesions of psoriasis, the author reports in detail the pathogenic theories of psoriasis, particularly in connection with Köbner's phenomenon. In his experiments he found that in twenty-six cases in which he endeavored to produce Köbner's local reaction, only seven patients reacted positively.

For the production of Köbner's local phenomenon he thinks that three conditions are necessary, first constitutional predisposition, a second occasional factor which may be of variable nature that he calls the endogenous factor and, third, the cutaneous alterations due to local trauma, probably acting on the cutaneous vessels.

He ends by confessing complete ignorance as to the real nature of psoriasis.

On the whole, this paper is a scholarly piece of work but very obscure from beginning to end, without definite or practical conclusions.

PATHOGENESIS OF KERATODERMA BLENORRHAGICUM. T. SCOMAZZONI, Gior. ital. di dermat. e sif. **72**:716 (June) 1931.

A case of keratoderma blenorrhagicum is reported in a patient who had suffered from chronic urethritis and arthritis for ten years. In the author's opinion the cutaneous lesions should be considered as allergic manifestations. Intradermoreactions with gonococcal vaccines and cutireactions with gonorrheal pus proved positive in this case. There were no gonococci in the cutaneous secretions obtained from under the crusts.

GOLD AND ARSPHENAMINE IN LUPUS ERYTHEMATOSUS. PINO PINETTI, Gior. ital. di dermat. e sif. **72**:748 (June) 1931.

The author used a mixed treatment with gold and arsphenamine preparations in sixteen cases of lupus erythematosus. Tolerance was good in fourteen cases. In 56 per cent of the patients the results were satisfactory; in 25 per cent there was great improvement, and in 19 per cent results were unsatisfactory. The author emphasizes the presence of malaria in 40 per cent of his cases, and concludes that among the etiologic agents capable of producing this dermatosis, malaria may be considered.

PARDO-CASTELLO, Havana, Cuba.

ONYCHOGRYPHOS DUE TO ECZEMA. JULIUS HELLER, Arch. f. Dermat. u. Syph. **163**:337 (June 2) 1931.

Heller describes two cases showing onychogryphotic changes in the nails of both hands and feet. Massive subungual hyperkeratosis raised the nail plates and changed the direction of their growth. Because of negative fungus findings, Heller considers these cases to be of eczematous origin.

INVESTIGATIONS ON ACROSCLEROSIS (SCLERODACTYLIA) AND SCLERODERMA. JOSEF SELLEI, Arch. f. Dermat. u. Syph. **163**:343 (June 2) 1931.

The author considers sclerodactylia, for which he proposes the more general term acrosclerosis, and scleroderma to be two distinct and separate clinical entities, which occasionally combine in the same subject. Sclerodactylia is caused by a disturbance of the central nervous system and is an angiotrophoneurosis, whereas scleroderma is considered to be due to local changes in the skin and deep connective tissue. The following points of differentiation are made:

Scleroderma.—(*a*) The lesions of scleroderma exhibit typical hard indurations in the skin which may spread to the deeper tissues, such as the subcutaneous tissue, the tendons and the muscles. Later the skin becomes atrophic or, as in myosclerosis, fixed with the deep sclerotic structures. (*b*) The indurations can occur anywhere and are usually asymmetrical. (*c*) They are like alabaster or wax. Often over and about them are found pigment changes such as hyper or depigmentation. (*d*) Trophic disturbances are seldom present. When they do occur, they are found on the fingers and seldom elsewhere. (*e*) Prodromal symptoms are absent or only seldom present. Pain is an infrequent symptom. (*f*) The infiltration may recede spontaneously, but other lesions usually form elsewhere.

Acrosclerosis.—(*a*) The lesions are characterized not by induration but by a stiff hard edema. On the ends of the fingers sclerosis takes place. The face may be masklike, owing to a similar hard edema. (*b*) Symmetry is the rule. The hands, the feet, the face or the ears are involved on both sides. (*c*) Local syncope (pale skin) and local asphyxia (blue skin) have been present for years on the hands or feet. (*d*) Trophic disturbances are present, such as ulcerations on the fingers, thinning or resorption of the phalangeal bones or gangrene of some of the phalanges. (*e*) Vasomotor disturbances are also present, such as paresthesias, a feeling of coldness or severe neuralgic pains. These symptoms may be prodromal or may accompany the process. (*f*) Increased sensitivity to epinephrine is regularly found.

Sellei has been using extract of pancreas, both by mouth and in injections, in the treatment for scleroderma with gratifying results. Because of this he considers scleroderma to be associated with disturbances in ferment production in the organism. In addition to pancreatic extract, he also administers gastric and duodenal preparations and, in cases showing hypo-acidity, hydrochloric acid and pepsin. Acrosclerosis is only slightly benefited by the foregoing therapy but the condition is temporarily bettered by the Leriche operation of stripping the sympathetic nerves.

In cases showing a diminished basal metabolism, thyroid, ovarian and hypophyseal therapy are of value in scleroderma but not in acrosclerosis.

THE RELATIONSHIP OF ERYTHEMA MULTIFORME EXUDATIVUM AND ATMOSPHERIC INFLUENCES. A. ZWECKER, Arch. f. Dermat. u. Syph. **163**:366 (June 2) 1931.

There appears to be a definite relationship between the frequency of occurrence of erythema multiforme exudativum and conditions of sunlight and humidity. The condition is more common in the months showing the greatest intensity of sunlight and the lowest humidity.

THE PHARMACODYNAMICS OF OIL-SOLUBLE BISMUTH PREPARATIONS. J. VONKENNEL, Arch. f. Dermat. u. Syph. **163**:379 (June 2) 1931.

Histochemically there are no differences observable at the areas of injection of oil-soluble bismuth preparations or oil suspensions of bismuth. The rapidity of elimination is approximately equal. In the experimental animal, oil-soluble bismuth is deposited in the organs in the following order: kidneys, spleen, liver, heart, lung and brain. In the rabbit, passage of bismuth from the mother to the fetus could be proved; in human beings, it was found to be present in the mother's milk. A greater concentration of the metal was found in syphilitic than in normal tissues. It was also found to be present mainly in the cells of the reticulo-endothelial system.

REPORT OF THE DRESDEN EPIDEMIC OF MICROSPORIA AND ALOPECIA PARVIMACULATA; THEIR RELATIONSHIP. WERTHER, Arch. f. Dermat. u. Syph. **163**:402 (June 2) 1931.

During the years 1928, 1929 and 1930 there was an epidemic of microsporia and alopecia parvimaculata involving 400 children from 3 to 14 years of age. The incidence of both conditions rose and fell at the same time.

The alopecia was characterized by the presence, mainly in the occipital region, of numerous irregular patches ranging in size from that of a small lentil to that of a penny, not always round but occasionally taking the shape of stripes or crossed stripes, sometimes with fusion of several areas to form a large one. The hairs at the periphery showed succulent roots in contradistinction to the dry atrophic roots of those in alopecia areata. Occasionally some atrophy was present. In most cases hair regrew within the areas affected.

Werther considers the alopecia to be due to an involvement of the supporting structures of the hair either by the organisms or their toxins in the nature of a microsporid.

MONASH, New York.

A NEW FORM OF APPLYING RADIUM IN DERMATOLOGY. WERNER FREISCHMIDT, Dermat. Wchnschr. **92**:804 (May 30) 1931.

An ointment containing uranium was used in a group of fifty-three cases of chronic and subacute conditions of the skin, with satisfactory results.

DISAPPEARANCE OF A CROP OF SENILE SEBORRHEIC WARTS FOLLOWING ELECTROLYTIC DESTRUCTION OF A FEW. NAEGELI, Dermat. Wchnschr. **92**:805 (May 30) 1931.

Five or six seborrheic warts were destroyed by electrolysis, and no further therapy was carried out. Within the next month, practically all of the remaining warts disappeared spontaneously. The author made inquiries among other patients treated in the same manner, and in only one instance was a similar result noted.

SILVER LEAF IN THE TREATMENT OF ULCERS OF THE LEG. LUDWIG ISAAK, Dermat. Wchnschr. **92**:807 (May 30) 1931.

Varicose ulcers are covered with silver leaf (Beiersdorf), the edges of the ulcer being first covered with ointment of zinc oxide, U. S. P., and the whole covered

with soft zinc paste, U. S. P. The dressing is changed every three to eight days and varices present are obliterated by the injection method. Under this treatment, the ulcers healed rapidly, without a tendency toward recurrence.

THE ACTION ON THE SKIN OF CERTAIN CHEMICALS USED IN INDUSTRY. RODENACKER, Dermat. Wchnschr. **92**:829 (June 6) 1931.

An extensive review is made of the damage to the skin due to substances encountered in the chemical industry. The mechanism of the various types of injury is discussed.

THE CLEARING REACTION OF MEINICKE AND THE KAHN REACTION IN FIVE THOUSAND SERUMS. H. ROSENFELD, Dermat. Wchnschr. **92**:836 (June 6) 1931.

The Kahn and Meinicke reactions were found to be considerably more sensitive than the standard Wassermann reaction, giving 25 per cent more positive results in syphilitic serums. The occasional unspecific reactions of these sensitive methods are not a contraindication for their use.

THE OCCURRENCE OF PERLÈCHE (ANGULUS INFECTIOSUS) IN PUBLIC SCHOOL CHILDREN AND A STUDY OF THE BACTERIAL FLORA. FRIEDRICH SCHWAB. Dermat. Wchnschr. **92**:873 (June 13) 1931.

Among the 17,032 school children of Nürnberg, the author found 129 cases of perlèche, 47 in girls and 82 in boys. Bacteriologic studies revealed diplococci, streptococci and staphylococci in various combinations. Lack of cleanliness is a factor of considerable importance.

SCLERODACTYLY ("AKROMIKRIE") AND SYPHILIS. G. J. UMANSKY, Dermat. Wchnschr. **92**:880 (June 13) 1931.

A woman, aged 25, who had congenital syphilis, was observed. She presented general underdevelopment, with thinning of the joints of the end phalanges of the extremities, small maxillae, nose and lips, acrocyanosis, dystrophy of the nails, subnormal temperature and a small hypophysis. Antisyphilitic therapy resulted in general improvement.

INCREASE OF SENSITIVITY OF SKIN AS A RESULT OF LOCAL APPLICATION OF SALICYLIC ACID AND ITS USE IN THE TECHNIC OF THE PATCH TEST. HELMUTH FREUND, Dermat. Wchnschr. **92**:901 (June 20) 1931.

The author found that the addition of 5 per cent salicylic acid to an ointment increased the sensitivity of the skin to mercury, quinine, tobacco, iodine and resorcin. Thus a patient in whom a positive patch occurred when 10 per cent tobacco and 5 per cent salicylic acid in petrolatum were applied, did not react to either 10 per cent tobacco in petrolatum or to 5 per cent salicylic acid in petrolatum. The effect is apparently due to the mild keratolytic action of the salicylic acid.

GONORRHEAL KERATOSES. W. B. BERSON and S. I. MATUSKOW, Dermat. Wchnschr. **92**:909 (June 20) 1931.

In a man, aged 40, who had had gonorrhea thirteen years previous to examination and arthritis for five years, a generalized eruption developed, consisting for the most part of crusted lesions and in places suggestive of psoriasis. The polyarthritis was associated with deformity of some of the joints. Injections of gonococcus vaccine caused a urethral discharge and apparently assisted the local measures in obtaining an improvement in the condition. The Bordet-Gengou complement-fixation test for gonorrhea was positive.

PITYRIASIS ROSEA, AND PITYRIASIS ROSEA ET PUSTULOCRUSTOSA. OSKAR KIESS, Dermat. Wchnschr. **92**:945 (June 27) 1931.

Unusual forms of pityriasis rosea have been described in recent years. Two undoubted cases of this disorder in which there were many pustular lesions are described. In the first case, the pustular stage followed a primary bullous stage, while in the second, the lesions were apparently pustular from their inception.

THE TREATMENT OF MICROSPORON INFECTION WITH GRENZ RAYS. A. BUSCHKE, Dermat. Wchnschr. **92**:948 (June 27) 1931.

The author previously reported two cases of Microsporon infection in which cure was obtained by Grenz rays, without epilation. In four subsequent cases the patients were not cured. He believes that the success in the first two cases is explained by the fact that the patients had previously been treated with thallium, without success. He suggests that a combination of small doses of thallium with Grenz ray therapy may prove useful.

"BLACK SKINWRITING" ("SCHWARZE HAUTSCHRIFT"). FRIEDRICH DIETEL, Dermat. Wchnschr. **92**:950 (June 27) 1931.

As a result of his own investigation, the author agrees with Hosp (*Dermat. Wchnschr.* **91**:1895 [Dec. 27] 1930; abstr., ARCH. DERMAT. & SYPH. **23**:976 [May] 1931) that "schwarze Hautschrift" is not a biologic reaction, but a mechanical-chemical phenomenon.

THE AMOUNT OF FAT IN THE CELLS OF THE EPIDERMIS IN CERTAIN CUTANEOUS CONDITIONS. TIBOR WLASSICS, Dermat. Wchnschr. **93**:1063 (July 4) 1931.

Biopsy material was fixed in a diluted solution of formaldehyde, U. S. P. (1:4); frozen sections of 10 microns were made and stained with 40 per cent alcohol-sudan III and Delafield's hematoxylin. The size of the fat droplets was compared with the size of the nucleoli. In seborrheic dermatitis the fat droplets were found to be small but distributed throughout the epidermis. In the other dermatoses studied the fat droplets were increased in the parts of the epidermis in which the pathologic changes were most marked.

PULMONARY CHANGES IN PATIENTS WITH LUPUS ERYTHEMATOSUS; THE ETIOLOGY OF THIS CONDITION. EDWARD BRUNER and STANISLAW WASOWICZ, Dermat. Wchnschr. **93**:1068 (July 4) 1931.

Forty-seven patients with lupus erythematosus were carefully studied in order to determine the presence of pulmonary tuberculosis. Six of them showed no evidence of tuberculosis, twenty-six were considered possibly tuberculous on the basis of family history or of physical and roentgen examination. Fourteen patients showed evidence of healed tuberculosis, one showed doubtful activity, and none of them presented manifest involvement of the lung. The authors conclude that tuberculosis plays an important rôle in the pathogenesis of lupus erythematosus though not as definite a one as some other authors believe.

THE GOLGI APPARATUS OF THE HUMAN ECCRINE SWEAT GLAND CELLS. N. MELCZER, Dermat. Wchnschr. **93**:1101 (July 11) 1931.

By means of the osmium method the Golgi apparatus was demonstrated in the eccrine glands of the sole, axilla, arm and thigh. These were previously described by the author in 1925 as urate condensation bodies. He was unable to demonstrate the network form described by Bizzozero and Botteselli either

by the osmium or the silver impregnation method. The bodies vary from 0.1 to 12 microns in diameter. The smaller ones are unilocular, while the larger ones appear to be multilocular.

CONDYLOMA ACUMINATUM AND CARCINOMA IN THE SAME TUMOR. CONDYLOMATOUS PRECANCEROUS LESIONS OF THE GENITAL REGION (DELBANCO-UNNA). H. MÜHLPFORDT, Dermat. Wchnschr. **93**:1145 (July 18) 1931.

A laborer, aged 52, presented a rapidly growing condyloma of the penis. Biopsy showed a nonmalignant growth, and it was excised locally. Further pathologic study revealed a squamous cell epithelioma in one area, and a radical amputation was done subsequently. The author considers the lesion as having been precancerous from the first and lays special stress on its rapid growth.

A WANDERING SKIN ERUPTION OF THE PALM OF ONE HAND, PRESENT FOR TWENTY-FOUR YEARS. F. FÜLLEBORN, Dermat. Wchnschr. **93**:1163 (July 18) 1931.

For twenty-four years the patient had had a recurring eruption, developing every few weeks or months on various areas of the palmar surface of the right hand. The eruption consisted each time of a small group of vesicles associated with swelling and considerable pruritus. The infection was apparently obtained in East Africa. Though no organism was demonstrated, the author considers the eruption as probably being due to a wandering parasite, such as a small nematode larva.

MILIARY AND NODULAR LYMPHOCYTOMA OF THE SKIN. HELMUTH FREUND, Dermat. Wchnschr. **93**:1189 (July 25) 1931.

A woman, aged 75, who suffered from myocardial degeneration associated with edema of the legs which had been present for a number of years, presented a nodular eruption of the ankles and legs. This had been noted for the past two years. There was no clinical evidence of a lymphogranuloma. Sections showed lymphocytic infiltration in sharply limited nodules. The differentiation between leukemia and lymphocytoma is discussed, and the author considers the latter as the probable diagnosis. The edema probably played a part in the etiology.

LINEAR TRICHOPHYTID. FRIEDRICH DIETEL, Dermat. Wchnschr. **93**:1194 (July 25) 1931.

A trichophytid developed following the lymphatic channels of one arm in a patient with a deep trichophyton infection of the forearm and face.

CISTERNAL AND LUMBAR PUNCTURE FOR NEURODERMATITIS OF BROCQ AND OTHER SKIN DISEASES. W. SCHÖNFELD, Dermat. Wchnschr. **93**:1197 (July 25) 1931.

The pruritus of generalized neurodermatitis was considerably ameliorated or cured in six of eight cases. This relief from pruritus was also observed in lichen planus and occasionally in eczema and a few other pruritic eruptions. In a few cases variations from the normal colloidal gold reaction were noted.

RECURRING HERPES SIMPLEX IN THE SCAR OF AN ARTIFICIAL SOFT CHANCRE. L. WILLBRAND, Dermat. Wchnschr. **93**:1219 (Aug. 1) 1931.

The patient had had a recurring herpes progenitalis since puberty. A soft chancre developed, and in the course of its investigation, material from the ulcer was injected into the skin of the abdomen, where an ulceration developed. Eight months later, herpes simplex developed in the abdominal scar, and this occurred again the following year.

TREATMENT FOR ECZEMA AND PSORIASIS. A. PHILIPPSON, Dermat. Wchnschr. **93**:1220 (Aug. 1) 1931.

As treatment for eczema the author advises washing with soap and warm water followed by thorough rinsing and drying, after which he sponges the areas with a 5 per cent solution of tannic acid containing 0.1 per cent salicylic acid and 2 per cent glycerin. In the noninflammatory cases he substitutes 1 per cent lactic acid for the tannic acid.

Patients with psoriasis are treated with a sarsaparilla decoction given internally. A 10 per cent balsam of peru and ammoniated mercurial ointment is used locally on the visible areas, while on the covered areas a tincture of rectified oil of birch tar, N. F., in alcohol and ether is painted on the lesions.

RHEUMATOID JOINT PAINS IN THE COURSE OF ARSPHENAMINE THERAPY. ALBERT WIEDMANN, Dermat. Wchnschr. **93**:1225 (Aug. 1) 1931.

Two patients are reported in each of whom a mild arsphenamine dermatitis occurred after the third dose of neoarsphenamine. This cleared up in each instance, and when the injections of arsphenamine were resumed severe pains in all joints accompanied each dose. Another arsphenamine preparation was substituted, and the pains in the joints did not recur.

ARSPHENAMINE DERMATITIS WITH AGRANULOCYTIC SYMPTOMS COMPLEX. FRITZ SPANIER, Dermat. Wchnschr. **93**:1227 (Aug. 1) 1931.

A patient with a severe arsphenamine dermatitis developed a necrotic stomatitis. The white blood cell count dropped to 2,800, 87 per cent of which were lymphocytes. Death occurred in two weeks. The condition is considered to be an agranulocytic symptom complex due to arsphenamine rather than a true agranulocytic angina.

TAUSSIG, San Francisco.

ORAL DESENSITIZATION IN ALLERGIC DERMATOSES BY SPECIFIC PEPTONE. ERIC URBACH, Klin. Wchnschr. **9**:2046 (Nov. 1) 1930.

Alimentary idiosyncrasies may cause not only acute toxic exanthems but also the more chronic urticaria, prurigo, lichen urticatus and strophulus infantum. Epicutaneous and intracutaneous tests are often unsatisfactory. Better diagnostic results are frequently obtained with experimental food tests. One may begin with almost a starvation diet, consisting of tea, coffee, whisky (from 80 to 100 Gm.) and sugar for two days. After the urticaria clears up, other foods are slowly and systematically added, one at a time, beginning with butter, potato, fruit juice and leafy vegetables; then the chief animal proteins are added. After the reacting food is found, it is desirable to repeat the test and to see whether more than one food substance is at fault. Occasionally the method of preparation of the food may cause the allergy, as in the case of a patient who reacted to omelet but not to boiled egg.

The intolerance may be overcome by (1) omitting the food from the diet, (2) omitting every kind of protein for fourteen days and then beginning with small amounts (this is particularly suitable for recently developed allergy), (3) exceedingly slow desensitization and (4) specific peptone therapy. The specific peptone therapy is based on skeptoprophylaxis, which consists in giving the offending food or medicament, in minute amounts, one hour before the ingestion of larger amounts of the same substance.

The best results, the author claims, have been obtained with specific peptones made from such food, and he has had peptones prepared from egg, milk, beef, pork, lamb, fish, corn, wheat, beans and peas. One-tenth gram is given from three-fourths to one hour before a meal containing the allergic food, beginning with small amounts. The time for desensitization by this method varies, but often fourteen days are enough to give permanent relief. In infants it becomes

necessary to reduce the feedings to three or four per day, so that peptone will not be given while the stomach still contains food. For the same reason, nothing but water is given between meals.

SILVERMAN, Syracuse, N. Y. [AM. J. DIS. CHILD.].

TATTOOING, ITS HISTORY, APPLICATION AND METHODS OF REMOVAL. LASZLO CHOLNOKY, Borgyogyaszati Szemle **4**:69 (April) 1931.

The author begins with a brief but interesting historical account of tattooing, pointing out that the first uses of tattoo were not only for decorative purposes, but to denote certain professions, tribes, religious sects and social strata. In Albania, Christians had their foreheads tattooed with a cross, to distinguish them from Mohammedans, while Buddhists had a likeness or a quotation of Confucius tattooed on their bodies. In some countries, war prisoners were tattooed. But the process was used most widely for ornamentation. In French Sudan, persons in whom tattooing produced large keloids were especially honored. This is known as "tatouge cicatrielle." The author vividly describes the rich coloring of oriental tattooes and the craze of rich men and women who visited the Orient and had all sorts of figures tattooed on their bodies. He also describes some of the marks found on the Egyptian mummies and the early tattoo instruments.

The use of tattoo for therapeutic purposes was the next development, and was used first by Arnig. Acting on Dohi's experience which showed that syphilitic changes do not occur on tattooed parts because the mercury content of the cinnabar dye keeps the spirochetes away, he advanced the theory that it might be well to tattoo those parts in which syphilitic infections occur most often.

Materials brought into use were gold chloride, india ink, carmine and pigment from the iris of bull's eye. The conditions treated were alopecia, pale lips and patches of vitiligo. Attention is then called to occasional accidents incidental to tattooing, such as the introduction of syphilis, lepra and tuberculosis, and to bad end-results, such as scars and keloids. He then describes the various types of tattoo instruments used formerly and today, reviewing critically the substances and methods used by different observers.

The histology of tattoo marks is considered, and the observations of Virchow according to whom pigment particles do not enter the sweat glands but are placed in the cortices are described. Hebra described pigment in the cutis proper; Meirowski, along the blood vessels, while Dohi considered the intracellular location so characteristic as to make it pathognomonic in argyrosis. Peller, experimenting with tissues of different ages, described different histologic pictures depending on whether the dye was placed in the epidermis, cutis or subcutis. Occasionally tattoo marks disappear spontaneously.

The various methods of removing tattoo marks are then discussed in detail. Surgical, chemical and physical methods are used.

A surgical method is used by Wederhake, who dissects the skin over the tattoo mark, turns the flap inside out, stretches the skin over a board, removes the pigment particles from the subcutis with a fine needle and, after straightening the skin out, puts the flap back in the right position.

Dubreuilh scrapes the tattooed parts, and Ravaut uses a curet and hot air over the tattoo mark.

With the chemical methods, attempts are made to mobilize pigment particles. Most operators use acids. The author discribes Variot's method in which a 40 per cent solution of tannic acid is brought to the deep layers by means of needles. This is followed by silver nitrate. The black residue forms silver tannate. This causes a necrosis of skin, which sloughs in a few days and the oozing, rich in leukocytes, contains the pigment particles which are washed out by the lymph stream. Variot then applies powdered tannin and cold applications to reduce the inflammation. The author then discusses Meirowski's method, in which a 40

per cent solution of pyrogallol paraplast is employed, and other methods which differ slightly in the chemicals and the technic used. Meirowski, in addition, uses the roentgen and Finsen rays.

A number of physical methods are described, the most important of which is the use of galvanic current. In this method, the nascent oxygen due to electrolysis macerates the tissue, and with the inflammation and subsequent oxidation, the pigment particles are carried away. Diathermy, carbon dioxide snow and cryocautery have also been used.

Among the laity many substances are used. The most common of these are sour milk, sauerkraut juice, horse milk and lemon juice, of which the most valuable is the lemon juice method. In this method, the action of the weak acid in the lemon juice is sufficient to mobilize the pigment particles without causing unnecessary destruction of tissues.

The area is retattooed with lemon juice, the needles piercing the skin so as to insert the lemon juice into the cutis. The area then is covered with gauze saturated in lemon juice and over it is placed a paraffin covering from 4 to 5 mm. thick at a temperature of 90 C. Then the whole area is wrapped and covered with paraffin at the same temperature. The bandage soon becomes fixed, hard and hermetically sealed and resembles a light plaster of paris cast. After twenty-four hours, there is an intense inflammatory reaction, with oozing of leukocytes and particles of pigment through the needle openings. Again lemon juice is applied, and the area is bandaged with paraffin. This is repeated daily.

The hyperthermic action of the paraffin increases the action of the sweat glands and promotes the migration of leukocytes, and the capillaries become dilated, causing a rich exudate. Healing without scars is attributed to the action of the paraffin.

H. C. SCHORR, Chicago.

A CASE OF MORBUS RITTER (DERMATITIS EXFOLIATIVA NEONATORUM). N. C. VAN VONNO, Nederl. tijdschr. v. geneesk. **75:**1932 (April 11) 1931.

A bacteriologic and histologic investigation was made in a typical case of dermatitis exfoliativa. The bacteriologic examination of the sterile prepared corium demonstrated numerous colonies of Staphylococcus albus and some of Staphylococcus pyogenes and aureus. From the blood Staphylococcus pyogenes-albus could be cultivated. Histologic examination of the skin showed that it was universally affected. The subepithelial tissue was degenerated; the epithelium itself was partly excoriated in an irregular way. There was a strong "Quellung" of the skin.

The author concludes that dermatitis exfoliativa is not a reaction but an infection of the skin with Staphylococcus pyogenes-albus, which results in a disease of the whole organism.

VAN CREVELD, Amsterdam, Holland [AM. J. DIS. CHILD.].

Society Transactions

CHICAGO DERMATOLOGICAL SOCIETY

Regular Meeting, April 15, 1931

MICHAEL H. EBERT, M.D., *Vice President, Presiding*

A CASE FOR DIAGNOSIS (EPIDERMOLYSIS BULLOSA?). Presented by DR. F. E. SENEAR and DR. MAX S. WIEN.

V. T., a girl, aged 9, was the second child in a family of six children, all of whom were living and well. At 14 months of age, after an injury to the right knee, a swelling the size of a hazelnut was noted by the mother. This broke open after another injury a few days later, discharging a bloody serum; then it healed, leaving a scar. Subsequently, similar spots were noted after injury to the elbows, the knees and at the heels, all the areas forming bullae, discharging a bloody fluid after rupturing and leaving a scar. The child's general health had been good. She had had measles at 6 years and smallpox at 7 years of age. The mother stated that she was a "nervous child." The mother had been under observation with keloids of the buttocks following a burn.

A lesion was present over the right knee which followed an injury one month previously, but which had not healed because of repeated trauma. The child presented over both elbows, knees and achilles tendon, well defined scarred areas, varying in size from that of a dime to that of a quarter, from brown to purple. There was a marked laxity of the integument in the areas of scarring, and the skin could be picked up and readily pulled away from the underlying structure because of this apparent laxity and redundance of the subcutaneous tissue. A crusted area the size of a quarter was present over the right patellar area at the site of a bulla resutling from repeated injury to this area.

DISCUSSION

DR. E. A. OLIVER: I thought that the history was suggestive of epidermolysis bullosa, but I could not correlate the findings present at this time with that disorder, unless it is healed epidermolysis bullosa. Whether the lesions of epidermolysis bullosa could entirely disappear and leave such scars I do not know.

DR. F. E. SENEAR: I think, also, that the history is suggestive of epidermolysis bullosa. The child has had about twenty-five lesions of this type, according to the mother, and the sequence is that of epidermolysis bullosa. The picture remaining, with the marked laxity in the skin, is not that seen in that disorder. The child probably has some inherited defect in the skin, which biopsy will perhaps reveal, and which accounts for the peculiar reaction following trauma.

TUBERCULOSIS MILIARIS DISSEMINATUS FACIEI? MILIARY SARCOID? Presented by DR. RUBEN NOMLAND (by invitation).

A colored woman, aged 32, had had a skin disorder on her face and neck for a number of years, accompanied by itching. The eruption was located on the face, chiefly about the eyelids and nose, and on the neck. The lesions were angular, lichenoid papules, about 2 mm. in diameter, that were lighter than the surrounding skin. Those on the eyelids were slightly larger and not angular.

A lesion on the neck was removed for microscopic examination, which showed a small, sharply circumscribed granuloma just beneath the epidermis. The infiltra-

tion consisted chiefly of epithelioid cells, with a few lymphocytes at the periphery and giant cells at the center.

The Wassermann reaction was negative.

DISCUSSION

DR. CLARK W. FINNERUD: I think that grossly and histologically this is a classic case of tuberculosis miliaris disseminatus faciei, as called to our attention by Wise a few years ago.

DR. HAMILTON MONTGOMERY: The histologic picture is that of a tuberculous cutis follicularis disseminatus. It shows definite tubercle formation about the blood vessels. Clinically, these cases are often called lupus miliaris disseminatus or lupus follicularis disseminatus. I do not like these terms, because the disease is not a localized form of tuberculosis, as is lupus vulgaris, but is a manifestation of a hematogenous tuberculosis, and it responds differently to treatment.

DR. H. J. PARKHURST: It was my impression that this case resembled Klauder's "multiple sarcoid-like granulomas of the skin."

PITYRIASIS RUBRA PILARIS? Presented by DR. E. A. SKOLNIK (by invitation).

J. K., a white man, aged 28, stated that he had had a similar disorder about three years ago, which lasted about one and one-half years and then disappeared. The present trouble began about three months ago. It appeared first on the face; three weeks later it appeared on the body. He did not complain of much discomfort.

Examination disclosed a generalized lichenoid follicular eruption, the smallest lesion being about the size of a pinhead, firm and pale red. In some areas, especially on the face and the elbows, the lesions coalesced and formed reddened scaling areas.

Biopsy showed practically no changes except a hyperkeratosis of the hair follicles and a mild inflammatory reaction around them.

Physical examination gave negative results.

DISCUSSION

DR. J. H. MITCHELL: The lesions about the face, the spicules on the shoulders and the papules of lichenoid character were suggestive of pityriasis rubra pilaris.

DR. UDO J. WILE: I believe this to be a case of pityriasis rubra pilaris, but with a question mark, because it lacks some of the characteristics that would enable us to make a positive diagnosis at this time. Many of the lesions look much like those of seborrheic dermatitis, and I think that only the future course of the disorder will tell the story.

DR. HAMILTON MONTGOMERY: The sections presented unfortunately do not show the orifices of the hair follicles, so that it is difficult to make a positive histologic diagnosis of pityriasis rubra pilaris.

SCLERODERMA CIRCUMSCRIPTA? LICHEN ATROPHICUS ET SCLEROSUS? Presented by DR. E. A. OLIVER.

A white man, aged 37, presented a group of oval, elliptic lesions that had been present for the past two years on the abdominal wall, just above Poupart's ligament on the right side. There were eight lesions, varying in size. One had been removed surgically and was replaced by a keloid. The lesions were ivory white, surrounded by a slightly erythematous halo. Several smaller lesions were visible on the right arm and the right side of the neck. Many of the lesions showed definite comedone formation.

Two lesions were removed for biopsy. One was an early lesion with a white center and a suggestion of erythema about it. The second was from an area

showing comedone-like plugging. The most marked change in the section from the early lesion was in the connective tissue. There were thickening of the fibers and a change in the staining reaction, the fibers staining dark with acid orcein. This area extended quite deeply in the center of the lesion, while at the periphery it gradually shaded into normal, where there was moderate infiltration of round cells about the vessels. The "disk-like" sclerosis with a vascular reaction was characteristic of scleroderma guttata.

A second section from a later lesion showed marked atrophy of the epidermis with hyperkeratosis about the mouths of the follicles. The underlying connective tissue showed sclerosis.

DISCUSSION

DR. DAVID LIEBERTHAL: The small lesions are atrophic and show plugs, but on the right side of the groin there is a hard infiltrated patch. I do not think that both types of lesions belong together, but the smaller ones impress me as being those of lichen atrophicus.

DR. HAMILTON MONTGOMERY: This case is of extreme interest as far as the etiology and grouping of these cases go. I believe that it is a case of lichen sclerosus et atrophicus. The histologic sections I have seen previously of lichen sclerosus et atrophicus have simulated more a microscopic picture of lichen planus than one of morphea. The histopathologic picture in this case is definitely that of morphea and shows none of the features of lichen planus.

DR. CLARK W. FINNERUD: The patch on the groin I believe to be of the same nature as those on the arms and the trunk. Histologically, in the infiltrative stage one cannot be certain about the diagnosis, but the plugging, which is shown also histologically, and the uniform sclerotic character of all the patches, with the horny plugs throughout, make me think that this definitely belongs in the group of lichen atrophicus et sclerosus.

DR. RUBEN NOMLAND: I think that it is the guttate type of morphea. In the first place, the elementary lesion I removed was a small, nonelevated, white spot not more than 2 or 3 mm. in diameter. In lichen sclerosus et atrophicus the spot is a white, elevated, lichenoid papule, while the macule is the lesion in guttate scleroderma. Microscopically, they are quite similar. The second point to which I wish to draw attention is the plugging. Plugging is frequently present, according to the literature, in the superficial forms of scleroderma.

DR. E. A. OLIVER: To me the case is one of morphea, even though some of the lesions do show comedone-like plugs. I am sorry that the patient painted iodine on some of the lesions, for, without this, you can see a well defined, violaceous border to all the lesions. I have a case of typical lichen planus sclerosus et atrophicus under observation now. The patient, a woman, has several groups of papular, ivory-colored lesions in the scapular region. Individual groups of these lesions show a typical plugging of lichen planus sclerosus. There is no resemblance between the two cases. The histology, as you can see, is that of morphea.

A CASE FOR DIAGNOSIS (CARCINOMA?). Presented by DR. F. E. SENEAR and DR. H. RATTNER.

Mr. G. T., aged 51, said that in October, 1929, a lesion developed on the penis which was diagnosed carcinoma. At the start the lesion was the size of a millet seed, but by the time the patient saw a physician, it was the size of a split pea. He was circumcised at once, and then was treated with radium. He had three radium treatments elsewhere over a short period of time, and soon afterward the condition became worse, the glans became red and swollen, and an ulcer formed which covered the entire glans penis, but had healed until it involved only a portion of the glans on the anterior surface.

The patient presented a superficial ulceration of the glans on the anterior surface, extending a little beyond the corona. The area was pale pink, the base

was clean, and the whole lesion had a glazed appearance, being covered with a thick, clear discharge. The borders were irregular, but not pearly or raised. The glans felt hardened as though fibrous, and the meatus was constricted. There was no inguinal adenopathy. He did not complain of pain except when he urinated.

Dark field examination on several occasions gave negative results. The Wassermann test of the blood, smears for Vincent's organisms and bacteriologic and fungous studies all gave negative results.

DISCUSSION

DR. E. A. OLIVER: I thought that there were atrophy and signs of an old radium dermatitis. I could not see any evidence of carcinoma.

DR. HAMILTON MONTGOMERY: I thought that the man had both a radium dermatitis and an epithelioma of a superficial type.

DR. F. E. SENEAR: We showed the patient because there was a question as to whether or not the residual ulcer was the result of radium therapy. The absence of pain at any time, as far as the surface of the glans is concerned, did not seem to fit in with a radium reaction as severe as would be expected in one of this extent. The history is very vague. The patient had more or less phimosis, and I think there is a question as to whether the original lesion was a carcinoma. He had a lesion the size of a split pea at its maximum, and the diagnosis was made only clinically. The fact that originally the ulcer covered the entire glans penis and now has healed until perhaps only one-third is involved makes me think that there is no epithelioma remaining.

PITYRIASIS RUBRA PILARIS? Presented by DR. M. H. EBERT and DR. DAVID OMENS.

A Jew, aged 21, single, presented a disorder of four months' duration. The skin was dry, with a mild generalized erythema with moderate scaling. The legs and to a less extent the thighs looked as though he had ichthyosis. The hyperkeratosis was psoriasiform on the elbows and knees. The palms and soles were dull red and thickened, and there was some dystrophy of the nails. Punctate, black, follicular keratoses were present over the dorsum of the proximal phalanx of each finger. The axillary and cubital folds were thickened and a dirty grayish color.

DISCUSSION

DR. CLARK W. FINNERUD: This case reminds me of several patients I have seen who have had chronic wasting disorders and have developed an ichthyotic type of skin. This has been classified as acquired ichthyosis. This patient states that he has been in perfectly good health, but clinically he has all the essential changes that are seen in that disorder. There is very little gross evidence of inflammation, simply a general scaling. The acquired form may simulate closely the usual or congenital type of disorder. He has some broken off hairs over the phalanges and legs, but I would not consider those the characteristic plugged follicles that we see in pityriasis rubra pilaris.

DR. M. H. EBERT: I thought that this case was very suggestive of pityriasis rubra pilaris. There was marked thickening of the palms and soles, and I thought that the plugging on the dorsa of the phalanges was sufficiently suggestive to warrant that diagnosis. I could not account for the ichthyotic type of scaling.

A CASE FOR DIAGNOSIS (SCROFULODERMA?). Presented by DR. E. A. OLIVER and DR. RUBEN NOMLAND.

A poorly nourished colored woman, aged 28, had an "ulcer" on her neck of two months' duration. About two months ago she first noted a red, tender "kernel," which ulcerated in about two weeks. Several abscessed teeth were

removed at that time. The ulcer had slowly enlarged. Several weeks ago a second "kernel" appeared, which had recently ulcerated.

When first seen she presented an ulcerated lesion, the size of a palm, in the left submaxillary region. The border was clean cut and about 5 mm. across. Protruding from the floor about 2.5 cm. was a verrucous, dirty crust, which had disappeared. A similar lesion, 2.5 by 1.6 cm., was located behind and above the larger one. A specimen was taken from the edge for biopsy, which showed a marked, nonspecific, inflammatory reaction extending deep into the cutis.

DISCUSSION

DR. F. E. SENEAR: I think that the question rests between tuberculosis and syphilis. It is difficult to make a diagnosis after seeing the patient for only a short time, but in view of the short history of the clinical lesions, I would be in favor of syphilis rather than tuberculosis. Likewise, in its clinical appearance the smaller lesion is very much like one I saw in a case in which the patient had gumma of the thyroid with lesions extending down over the chest, which showed exactly the same type of breaking down. It is also much deeper than is ordinarily the case in tuberculosis colliquativa. On this ground, I favor syphilis rather than tuberculosis.

NOTE.—Subsequent antisyphilitic treatment resulted in rapid and marked improvement, but not, as yet, in healing.

CARCINOMA OF THE SKIN, METASTATIC. Presented by DR. MAX S. WIEN.

G. S., a white man, aged 64, under observation on the medical service of the Cook County Hospital, had for the past four months complained of constipation, pain in the lower part of the abdomen, urinary incontinence and tumors in the skin. A left facial palsy of one month's duration also was present. He had lost about 30 pounds (13.6 Kg.) in the past three months. Roentgenograms of the gastro-intestinal tract revealed a constant filling defect of the pylorus indicative of a malignant condition, and those of the chest showed a metastatic lesion in the middle third of the right lung field. The medical diagnosis was carcinoma of the stomach with metastases.

The patient presented multiple, disseminated, discrete, firm, cherry to hen's egg sized nodules in the subcutaneous tissue of the trunk and extremities. Most of the lesions were freely movable, and in some there was adherence of the overlying skin, with telangiectatic vessels over their summits. The lesions were of cartilaginous consistency and did not break down, and some were distinctly tender to palpation. A few pedunculated lesions of the molluscum fibrosum type were present on the back, and there was a mottled type of light brown pigmentation over the abdomen in the midline, which appeared after the continued application of a hot water bottle for pain in the lower part of the abdomen.

Histologic examination of an excised nodule by Dr. R. H. Jaffé showed the nodule to be located in the subcutaneous tissue and composed of indifferent round cells with a scanty cytoplasm and a round nucleus with a fine chromatin structure. The cells varied slightly in size and were arranged in alveoli that were separated by a delicate stroma of fibrillar connective tissue. There were numerous mitotic figures with short chromosomes. Adjacent to the nodules were small accumulations of lymphocytes. In one place near the periphery bundles of nerve fibers were found surrounded by tumor tissue.

The diagnosis was metastasis of an indifferent (round) cell carcinoma.

NOTE.—The autopsy on this patient revealed a primary bronchogenic carcinoma of the lung as the focus from which the metastases originated. The filling defect in the stomach, shown on roentgen examination, was produced by the presence of a polyp in the pyloric region of the stomach and the enlargement of the peripyloric gland due to a metastatic carcinoma.

Regular Meeting, May 20, 1931

MICHAEL H. EBERT, M.D., *Vice-President, Presiding*

GENERALIZED, NODULAR SYPHILIS. Presented by DR. CLARK W. FINNERUD.

A woman, aged 28, presented a generalized, patchy, nodular eruption, of one year's duration. She was under treatment in a surgical ward for stricture of the rectum. Since a severe foot infection two years before, she had been subject to arthritis and night sweats. The Wassermann reaction of the blood was strongly positive. Biopsy revealed changes of tertiary nodular syphilid. The patient also presented numerous pea-sized and larger areas of atrophy of the trunk and extremities, some of them being elevated.

DISCUSSION

DR. O. H. FOERSTER: This patient presents an intricate condition, both clinically and histologically. There is clinical evidence of syphilis, and almost equally prominent features to substantiate a diagnosis of tuberculosis of hematogenous distribution. The color of the lesions is more red than one sees in lesions of tuberculosis. The macular atrophy, which on the neck is a minature replica of the Schweninger-Buzzi type of atrophy, suggests syphilis.

DR. MICHAEL H. EBERT: Some years ago I presented before the society a case of macular atrophy in a syphilitic patient, which exactly resembled the atrophy in this man. In Dr. Ormsby's office three years ago we saw a young woman with individual lesions which were similar, although they were arranged more accurately in circles, and on pressure with glass the color usually associated with tuberculosis was present. That patient's Wassermann reaction was positive, and a few injections of arsphenamine cleared up the condition completely.

DR. CLARK W. FINNERUD: I thought that clinically this was a case of disseminated, generalized lupus vulgaris, rather than one of generalized tertiary syphilis, in spite of the fact that Dr. Kellogg Speed had made a diagnosis of syphilitic stricture of the rectum, and the Wassermann reaction was strongly positive. After looking at the section I feel positive that, in spite of the history of night sweats, and in spite of the roentgen findings, this is a case of generalized nodular syphilis.

LUPUS VULGARIS OF THE NOSE. Presented by DR. A. W. STILLIANS and DR. CLEVELAND J. WHITE.

A housekeeper, aged 29, presented several nodules on the tip of her nose which had been present for two years. Her general health had been excellent.

Examination showed six discrete nodules on the tip and left side of the nose. Because of the total lack of confluence of the small tubercles and the absence of any apparent tuberculous involvement, the case had been of much interest. Nasal examination gave negative results, and a roentgenogram of the chest revealed no pathologic findings.

DISCUSSION

DR. EDWARD A. OLIVER: We have had occasion to observe this woman for the past year and a half. I have not seen her for about six months, and since that time the condition has spread considerably. It is a case of lupus vulgaris.

DR. CLEVELAND J. WHITE: Some months ago I presented a patient having a condition diagnosed as lupus vulgaris erythematoides. I took a specimen for biopsy and found that the condition was lupus erythematosus, as several members

suggested at the time of presentation. It was also stated by several at that time that lupus vulgaris would not begin to respond to a Gerson diet in a few weeks. In several instances patients have shown signs of improvement after two weeks on a modified Gerson diet.

A Case for Diagnosis (Cutaneous Atrophy). Presented by Dr. F. E. Senear and Dr. Max S. Wien.

W. F. R., a boy, aged 18, first noted an eruption on his face in the fall of 1929. The eruption appeared as scattered "pits" on his cheeks in a single group at the site of the largest pitted area now present on his left cheek. Since that time new pits had appeared.

There had always been some redness of the skin. The boy had never noted any comedones or pustules, although he did have an occasional crusted pimple. His general health had always been good, except for a chronic otorrhea since the age of 2 and the usual diseases of childhood. His voice had always been high pitched, and his beard scant. There were no subjective sensations.

He presented erythematous patches of confluent character involving both cheeks, and extending from the preauricular region to the hair margin of the temporal region, to the mandible and to the infra-orbital area to within 2 cm. of the margin of the nasolabial fold. There was an erythematous blush in the involved area and close examination, especially in reflected light, revealed scattered areas of reticular atrophy and pitting varying in size from that of a pinhead to that of a split pea. A patch of reticular atrophy the size of a thumb-nail was present on the left cheek at the site of the first group of lesions. Follicular accentuation was present in the patches, and there was a mottled type of light brown pigmentation interspersed in the involved area. An irregular waxy brown area was present on the right cheek in front of the ear, and there was a mottled light brown pigmentation behind both ears.

The patient had been under observation for about nine months, with no marked change in his condition.

DISCUSSION

Dr. Max S. Wien: When we first examined this patient we felt that we were dealing with an unusual type of localized cutaneous atrophy. The lesions brought to mind those cases of poikiloderma of Civatte, presented here, but on closer examination the clinical picture lacked many important points to place it properly in the Civatte group. We then thought of those cases of folliculitis ulerythematosa reticulata reported by MacKee and Parounagian (*J. Cut. Dis.* **36:** 339, 1918). In the cases reported by them comedones were a part of the clinical picture. They include in their article cases reported under various titles by Pernet, Heidingsfeld, Unna and Thiebierge, respectively. The case, reported by Pernet under the title "Atrophodermia Reticulata Symmetrica Faciei" seemed to bear many points of resemblance, clinically, to our case. Comedones were absent in the case here presented, and Pernet makes no mention of the presence of comedones in his case. We were unable to obtain permission for a biopsy.

Lichen Nitidus. Presented by Dr. Clark W. Finnerud.

A colored man, aged 23, had a generalized, small papular eruption of five years' duration which began following measles. The face had been involved only within the past three months. There were no subjective symptoms. The eruption was classic in all respects except for the peculiar grouping of the face lesions.

DISCUSSION

Dr. H. R. Foerster. The lesions on the genitalia are typical, although there are features suggestive of lichen planus elsewhere and some of lichen scrofulosorum. The distribution and grouping of the lesions are unusual.

DR. F. E. SENEAR: I felt that this was an extremely unusual picture, but agree with the diagnosis. It was particularly interesting that in addition to the linear arrangement, which fitted in equally with a diagnosis of lichen nitidus and with one of lichen planus, some of the lesions, particularly in the crypts of the axilla, showed a beautiful umbilication which would further confuse the picture.

DR. J. H. MITCHELL: At the last meeting Dr. Michelson described a case of typical lichen nitidus that was very similar to this case. He took a number of specimens for biopsy, and was much surprised to find the histologic picture of lichen planus. He is convinced that the two disorders may be one and the same thing.

DR. MICHAEL H. EBERT: There is a great deal of discussion concerning the etiology of lichen nitidus, and it is my impression that most of the cases we see here are in colored persons. Lichen planus is not particularly common in the Negro race, while tuberculosis is common in its various manifestations. In this case the history is that the eruption occurred following an attack of measles, when, as is well known, the resistance to tuberculosis is lowered. If the disorder does belong to the group related to tuberculosis there is no explanation for the long duration of the lesions, unless it is that the tuberculous material is deposited there, and through the months and years stimulates these lesions.

DR. OLIVER S. ORMSBY: In the miliary tuberculosis of children the lesions may become more or less permanent, and the verrucous lesions may continue indefinitely. I recently saw a man whom I have been seeing at intervals for twenty-five years. He had lesions at the elbows and knees that were typical of lupus verrucosa which occurred in a shower after scarlet fever. They were quite permanent, and I am sure it is possible for more or less permanent lesions to follow a shower of miliary tuberculous lesions, following measles. This man's physique from the standpoint of tuberculosis is interesting. His physical condition seems perfect.

DR. CLARK W. FINNERUD: I tried to keep this man dressed from the waist down, because I thought that without seeing the genital lesions there would be some doubt as to the nature of the eruption on the face. We have not had time to complete the sections.

NOTE: The histologic sections show epithelioid cell nests with slight round cell—plasma cell infiltration in the papillary bodies but no giant cells.

A CASE FOR DIAGNOSIS. Presented by DR. MICHAEL H. EBERT.

A woman, aged 23, had an eruption on the face of three weeks' duration which caused no subjective sensations. The lesions appeared first as small round patches near the mouth, which had gradually increased in size as new ones appeared. Within the last week a few lesions had appeared on the upper part of the arms.

The patient was married but had never been pregnant. Ten years before presentation she had been in a tuberculosis sanatorium for one year. During the past year she had lost 25 pounds (11.3 Kg.) without apparent cause.

Examination of the chest disclosed nothing of significance. The patient presented numerous yellowish-brown plaques varying in size from that of split pea to that of a small coin; they were grouped about the mouth but were less numerous on the chin and upper part of the neck. The lesions were somewhat raised and moderately infiltrated, and there was a thin furfuraceous scale on the surface. One or two of the lesions were annular. Nothing of significance was found on the mucous membrane. There was no adenopathy. The scales from the surface of the lesions disclosed no bacteria or fungi. The Wassermann reaction was negative. The blood smear revealed nothing of importance. The urine was normal.

DISCUSSION

DR. DAVID LIEBERTHAL: It is exceedingly difficult to suggest a positive diagnosis. We see cases of pityriasis rosea on the face on some occasions, but we

rarely see so much congestion in such a limited area. It is also peculiar that the eruption should be so diffuse around the mouth. The woman has a seborrhea of the scalp, and the lesions over the neck are seborrheic, so the condition may turn out to be a seborrheic dermatitis. The fact that this woman was in a sanatorium for suspected pulmonary tuberculosis recalls to my mind the advice of Unna, that in cases of seborrheic inflammatory conditions around the mouth, especially in children, one should suspect pulmonary tuberculosis.

DR. J. H. MITCHELL: The lesions on the cheeks were highly suggestive of pityriasis rosea. The patient had a few on the arms and on the trunk also that were suggestive. We used to think that all pityriasis rosea had to begin on the trunk and extend to the extremities, but now I expect to see the unusual rather than the typical cases of pityriasis rosea. I merely suggest this as a possibility.

DR. OLIVER S. ORMSBY: I believe it is not possible to make a positive diagnosis at this time. The circinate lesions on the chin could be produced by syphilis, and notwithstanding the negative Wassermann reaction, it may be syphilis.

The seborrheic patches on the face could be due also to yeast infection. The patches of that type seen in children are practically always occupied by yeast microorganisms. Whether they produce the condition or not cannot be stated, but Dr. Finnerud's work on perlèche seemed to prove that this may be the case. I think we have to consider pityriasis rosea, syphilis and mycotic infection.

DR. MICHAEL H. EBERT: A few days ago the appearance was different than it is today. There was not as much scaling, and I think more infiltration was present. I thought it best to present the patient, and then report on the histologic picture if it is possible to get a specimen for biopsy.

ONYCHOMYCOSIS OF THE FINGER-NAILS (RESPONSE TO THERAPY). Presented by DR. CLEVELAND J. WHITE.

A widow, aged 34, had had sore, broken nails of two years' duration, for which surgical removal had been advised.

Examination showed both thumb-nails and the right index finger-nail to be powdery at the distal portions and heaped up near the root beds. Cultures on repeated growths showed yeast organisms. No hyphae were found on examination with potassium hydroxide. An active focus of the fourth interspace of the left foot had been present.

One skin unit Grenz ray once monthly for three times and Whitfield's ointment were used. The benefit of the Grenz ray was considered problematic, but the patient was presented because of the rather prompt results obtained.

DISCUSSION

DR. OLIVER S. ORMSBY: I have had the same experience as every one else with the nails. I have seen them removed surgically, and after the nails regrew the ringworm recurred, as before. Several years ago I saw a patient who did some work on ringworm on his own nails, and was able to cure himself. He was not a physician, but was scientifically minded. He made numerous cultures and did an excellent piece of work. Since then we have successfully treated several patients in the same way. The nails should first be soaked daily with a solution of sodium biborate, and then scraped with the sharp edge of a piece of glass. Then ordinary benzoic and salicylic acid ointment is applied at night. I think it has been about two months since we started using this treatment on a woman with ringworm of the nails, and a report yesterday stated that the disorder has cleared up. The method is tedious, but I have used other methods in these cases for four or five years without the condition clearing up. With this method there is no possibility of roentgen changes, which occur if the patients are treated sufficiently with roentgen rays.

DR. J. H. MITCHELL: Clinically, this case was to me paronychia of the monilia type described by Kingery. I saw no evidence of activity of the fungus infection of the nail proper.

Years ago I tried the Whitfield treatment, urging the patients to do the scraping, and found, so far as I could determine, that the application of Whitfield's ointment to the nails would obtain a cure in three months. I have had some personal experience with this, for I have worked with one of my toe-nails for a number of years. I cleared the condition up with tincture of iodine at one time to see how long that would take. That was quite satisfactory, but I left enough of an area to try Whitfield's ointment. Without any soaking or scraping, which it is difficult to get patients to carry out, I find that the application of Whitfield's ointment every night for three months will clear up the condition. I have made it a rule to inspect the toe-nails of patients and instruct them to treat every toe-nail every night for three months, which helps greatly in eradicating the infection and preventing reinfection.

DR. CLEVELAND J. WHITE: I have found that ringworm infections of the nail respond quite readily to certain kinds of treatment, but it is impossible to say just what is best for each type of fungus as yet. I have been able to regrow nails by one means or another, securing a good clinical result by local therapy.

GRANULOMA INGUINALE (TREATED WITH ANTIMONY THIOGLYCOLLAMIDE). Presented by DR. F. E. SENEAR and DR. THEODORE CORNBLEET.

J. L. B., a Negro, aged 29, had a skin disorder of eleven years' duration. The lesions were irregularly shaped, chronic ulcers with granular, uneven bases, that exuded a purulent, scant material with a foul odor. There were scars of healed areas, with spotty depigmentation. Donovan bodies were found in smears of the exudate. The patient had received sixty-five injections of antimony potassium tartrate (tartar emetic) and considerable roentgenotherapy elsewhere. Both measures had resulted in only partial improvement, and were promptly followed by relapses when they were discontinued. About that time a report in the *Journal of the Canadian Medical Association* on the use of calcium thioglycollamide in granuloma inguinale was noted. Following this suggestion, 20 cc. of a 0.4 per cent aqueous solution of this drug was administered intravenously twice a week. There was marked improvement several days after the first treatment, and all the lesions were clean, dry and free from their offensive odor after the fourth. The patient then disappeared for a month, during which his condition relapsed. Since his return he had shown a progressive improvement, and at the time of presentation, after his twelfth treatment, the affected areas showed practically nothing but clean depigmented scars. There had been no untoward reactions to the drug.

DISCUSSION

DR. S. W. BECKER: I had occasion to administer this drug, antimony thioglycollamide, to several patients under the direction of Dr. Randall, who first used it in 1921. We had uniformly satisfactory results.

DR. EDWARD A. OLIVER: The improvement during the length of time the patient has been under treatment is very marked. We have treated a number of patients with ordinary antimony potassium tartrate but have never obtained as satisfactory a result as Dr. Cornbleet has in such a short time.

DR. J. H. MITCHELL: I wish to call attention to the statement of Dr. Pardo-Castello, in 1928, to the effect that many failures were due to the fact that the tartrate is sterilized by heat. He says it should be sterilized by filtration through a Berkfeld filter, if treatment is to be successful.

DR. F. E. SENEAR: This patient was shown because it is the first opportunity we have had to use this drug. I think the patient would have been completely

cured had he continued treatment regularly, but he did not return after great improvement resulted. He had had many injections of antimony potassium tartrate with no appreciable result, although there was some improvement. There had been a sufficient interval between that treatment and this, so that I feel that the result is definitely due to the present drug and not to the former treatment.

LEPROSY. Presented by DR. A. W. STILLIANS.

A Mexican laborer, aged 22, who had been in the United States for five years, first noted red spots on his left forearm three years before presentation, and one month later lesions appeared on his face. There was no subjective sensation. He was treated for ringworm for more than a year. He had never had fever or any other skin eruption.

Over the left cheek near the angle of the jaws was an oval, fairly sharply defined, dull red area 3 by 2.5 cm. At the external end of the left brow was an ill defined pink patch 5 by 3 cm., and on the right leg just above the ankle was a lesion 1 cm. in diameter, with a dark brownish-red center and a slightly elevated brown, smooth border about 0.2 cm. in diameter. On the left forearm was a pink macular patch with red, triangular follicles 5 cm. broad, and two deep red macules similar to that on the leg, 1 by 0.5.

There was anesthesia. The Wassermann and Kahn tests were negative. The urine and blood were normal.

DISCUSSION

DR. H. R. FOERSTER: The lesions show the characteristics of the maculo-anesthetic form of leprosy as indicated by atrophy, annular configuration and anesthesia. I accept that diagnosis even though Dr. Stillians has been unable to demonstrate the organisms.

DR. MICHAEL H. EBERT: There was some lack of hair in the outer third of the left eyebrow, and the patient had a firm nodule in the right testicle. The fact that the bacilli were not found suggested an interesting point that Dr. Caro called to my attention. At our last meeting a patient was presented with leprosy, with multiple lesions, and the bacilli were demonstrated in the section. There was no question about the diagnosis. Dr. Caro called attention to the fact that this was the same patient that was presented at the January meeting with a questionable diagnosis of sarcoid or leprosy. I think that patient was under observation for some time at the county hospital, and bacilli never were found. Apparently some change has taken place.

DR. CLARK W. FINNERUD: A good many sections were studied at that time, but we never found the organism. The patient denied having been presented here previously.

DR. EDWARD A. OLIVER: Continued search should be made for the organisms. One point that has not been mentioned so far is the atrophy seen about the hypothenar eminences.

DR. OLIVER S. ORMSBY: In the true maculo-anesthetic type of this disease the organisms are not found in the lesions of the skin. They are situated in the neuroglia of the nerves, and it is the irritation of these micro-organisms that produces first the hyperesthesia and later the anesthesia, and also the bullae and the macular lesions that occur.

DR. O. H. FOERSTER: I examined the nerve trunks and found a suspicious enlargement of the great auricular nerve on the left, but not on the right. However, I think the patient has leprosy, of a type that is readily missed.

DR. A. W. STILLIANS: This is the second time I have seen the patient, so there has not been much opportunity for thorough examination. We were interested because we have never seen lesions just like these. The histologic picture rather favors the diagnosis.

XANTHOMA. Presented by DR. CLARK W. FINNERUD.

A white man, aged 25, had linear, yellow thickenings in the coarse lines of the skin of the palmar surface of the fingers and hands, of about four months' duration. For about a year he had had similar yellow thickenings of the webs of the fingers, and yellow firm nodules of the elbows, some of the latter having been removed surgically. The urine showed no albumin or sugar.

DISCUSSION

DR. CLARK W. FINNERUD: I wished to show this patient because of the unusual distribution of the lesions, which are limited to the elbows and the course lines of the palms. The patient just came under observation yesterday, and we have had no opportunity to make an estimation of the blood cholesterol.

NOTE: DR. MICHAEL H. EBERT: At the last meeting a case was presented by Dr. Nomland which most of us considered one of lichen planus. Dr. Nomland was unconvinced, and now wishes to report that the biopsy was typical of lichen planus.

AMERICAN DERMATOLOGICAL ASSOCIATION

Clinical Meeting, Toronto, Canada, June 15, 1931

C. MORTON SMITH, M.D., *in the Chair*

HYDROA AESTIVALE. Presented by DRS. DAVID KING-SMITH, E. J. TROW and H. A. DIXON.

Miss P., aged 30, presented a condition of fifteen years' duration. The exposed portions of the body were involved from early spring until late summer, with swelling, redness and thickening of the skin. There had been recent improvement under therapy with a gold compound.

DISCUSSION

DR. E. L. OLIVER, Boston: I should suggest searching for hematoporphyrin by the hematoscopic method.

DR. LLOYD W. KETRON, Baltimore: This case did not impress me as one of hydroa aestivale. It rather suggested a condition that I should classify with the papular urticarias. I do not think that the fact that a disease of this kind recurs at certain times of the year or that it is precipitated by sunlight means that it is a true case of sensitization to light. Whether or not sensitization to light is present would not be difficult to prove. The patients with hydroa aestivale whom I have seen have shown much larger vesicles, and the ears have usually been involved.

DR. HOWARD FOX, New York: I agree with Dr. Ketron that the patient did not have all of the classic signs of hydroa aestivale. There were no vesicles; the ears were not affected, there was a lesion on the heel, and there were no definite scars that are characteristic of this disease. Furthermore, I think that the condition began when the patient was 12, which is rather late for hydroa. To Dr. Guy she volunteered the information that when she was exposed to sunlight the exposed areas swelled and became itchy, or pinkish, suggesting a vesiculo-urticarial reaction to sunlight.

DR. GEORGE M. MACKEE, New York: I am against accepting the case as one of hydroa aestivale. I think that if all sensitizations to light are accepted as hydroa aestivale there will be too broad a conception of the disease. I agree with

the previous speaker and think that there is an excellent possibility that there is a definite sensitization to light. On the other hand, light may be acting on the precipitating factor. All this can be definitely proved by test exposures to light and heat, as already pointed out.

DR. WILLIAM H. MOOK, St. Louis: This case may later develop into one of lupus erythematosus. This condition frequently begins as sensitization to sunlight, although the patient has not the characteristics of lupus erythematosus at present.

DR. E. J. TROW, Toronto: The case seems to be more or less self-evident. I may have too broad a conception of sensitiveness to light as related to the skin, but it seems to me that in this case there is a definite history of light producing a certain type of eruption. True, the case is not as typical of hydroa aestivale as it is of eczema.

A CASE FOR DIAGNOSIS (MORPHEA GUTTATA?). Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

Miss M. H., aged 40, had a disorder of four years' duration. Both sides of the neck and the midsternal region were involved with linear patches showing depigmentation and slight scarring, which were extending very slowly. The disorder was said to have begun in winter, two months after a mustard plaster burn.

DISCUSSION

DR. GEORGE M. MACKEE, New York: A differentiation must be made between lichen planus atrophicus and guttate scleroderma. There are no distinct papules of lichen planus, no umbilication, plugs, etc. The location and all the clinical features compel one to make a diagnosis of morphea guttata.

DR. OLIVER S. ORMSBY, Chicago: I have done much work on this type of case for years, and I think that the present case is one of guttate morphea. There are no well defined papules, but there are papule-like elevations of the skin. The surface does not exhibit black keratotic plugs or the pits left after their removal. Lichen planus atrophicus almost always presents these spinelike plugs. I have seen a number of cases of guttate morphea in this location. The lichen planus atrophicus papules are always white, and when they disappear they leave a white atrophic area.

DR. JOSEPH GRINDON, St. Louis: This case, like the other cases of scleroderma shown here today, shows a characteristic feature. About the margins of the lesions, and extending a little beyond them, the same process occurs in short strokes and lines, apparently coincident with the distribution of the collagen bundles. This, to my mind, establishes a diagnosis of scleroderma. I do not know whether attention has heretofore been called to this feature.

HODGKIN'S DISEASE. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

Mrs. B., aged 30, had a condition of fifteen months' duration which consisted of a generalized, papular, scabies-like eruption, accompanied by general pruritus. Swelling of the left side of the neck and a bluish discoloration of the left arm were noticed five months previous to presentation. Physical examination revealed secondary anemia. Deep roentgenotherapy to the glands of the neck was followed by marked improvement.

DISCUSSION

DR. ISADORE ROSEN, New York: I have the feeling that this patient presented a large number of lesions on the trunk before roentgenotherapy was employed. The lesions on the skin present very little from the clinical standpoint, but there is a type of eruption that occurs in connection with Hodgkin's disease

that is termed prurigo lymphatica, composed of small, skin-colored lesions much like those of prurigo but not so keratotic. I notice in the history that the case was confused at first with scabies. Some of these cases are diagnosed and treated as scabies until the real etiologic factor is discovered.

DR. E. J. TROW, Toronto: A biopsy was made, and the specimen was presented. The glands of the neck show the typical structure of Hodgkin's disease and the case was diagnosed as such by the department of pathology. There were a number of scabetic-like areas over the entire body before roentgenotherapy was employed, but now this condition of the skin has markedly improved.

INELASTIC SKIN (FOLLOWING ERYTHEMA MULTIFORME). Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

M. E., a girl, aged 10, presented a generalized condition that had been present since the age of 15 months. At that time there was a severe involvement of the skin, apparently erythema multiforme, the lesions persisting for two months. Following this attack, the skin over the entire body became lax and hung in folds, the change being particularly marked about the face, giving the appearance of an aged person. With the growth of the child the skin filled out somewhat, though evidences of lax tissue were still present. She continued to have recurring attacks of the condition resembling erythema multiforme. The blood was normal.

DISCUSSION

DR. HAROLD N. COLE, Cleveland: I was much interested in this case and the doughy type of skin that this child has. I wonder if there is a possibility of hypothyroidism?

DR. JOSEPH GRINDON, St. Louis: I took the condition to be scleroderma in the early stage.

DR. FRED D. WEIDMAN, Philadelphia: It is evident that in the early stage of this eruption, the lesions are erythematous and atrophic. I feel that if these lesions were deeper, involving the muscles in the early stages, the case would bear a close resemblance to a dermatomyositis. It has been shown that the level of this inflammatory process may vary greatly, and it may be that the atrophic and elastic processes are associated with the previous process of the condition. The causative genesis that is concerned in rheumatism, infection of the throat and other conditions has taken part in the case.

DR. SIGMUND POLLITZER, New York: This girl, aged 10, who looked to be about 30, with the peculiar changes in the skin, obviously has some grave endocrine disturbance, probably of a mixed nature. One may question whether the apparent erythema multiforme lesions may not be the preliminary erythema and swelling of scleroderma. I do not know whether or not as the redness disappears, the lesions do not leave indurated and atrophic patches.

DR. H. A. DIXON, Toronto: This child had a typical clinical picture of erythema multiforme at 10 months of age. Following that, the skin hung in folds over the whole body surface, giving a marked appearance of age. This is improving as the child grows. Since then she has had isolated lesions of erythema multiforme. We have not had a basal metabolism test made, but this may be worth while.

LUPUS ERYTHEMATOSUS. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

M. H., a girl, aged 14, presented lesions of twenty months' duration, involving the cheeks. The history stated that one week following the administration of diphtheria antitoxin, which was given because of paralysis of the palate and of the legs and positive nasal findings, swelling occurred across the nose but not of the

cheeks. As this swelling subsided, the cheeks became involved with scaly-topped papules, which increased to the size of a five cent piece after six months and gradually became larger. There was no burning or pruritus. The family history was irrelevant, and a roentgenogram of the chest showed nothing abnormal.

Gold sodium thiosulphate was given, and ulceration of the mouth, tongue and lips developed following the second injection. Administration of tuberculosis antigen was followed by ulceration of the mouth after the second treatment.

The Wassermann and the tuberculin tests were negative. Examination of the blood revealed 4,500,000 red cells; 5,000 white cells; polymorphonuclears 55 per cent; lymphocytes, 45 per cent; hemoglobin, 80 per cent.

URTICARIA (PAPULAR). Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

M. B., aged 3, presented a generalized eruption of two months' duration. The lesions began as small, edematous patches, which became papular and vesicular and were followed by crusting. There was severe irritation at times. No other children in the family were affected.

DISCUSSION

DR. SAMUEL AYRES, JR., Los Angeles: I think that this case represents a typical case of insect bites due to bedbugs. The lesions are typical; there is a fresh group on the hand, all of which appeared at the same time. It is said that there were bedbugs in the house when the family moved in.

DR. RICHARD S. WEISS, St. Louis: I agree with the diagnosis of insect bites, and wish to call attention to a typical diagnostic point concerning bites by bugs of many varieties. They bite in straight lines or angular figures. The eruption in this case was not symmetrical. There were linear groups on the left arm and none on the right, and an asymmetrical eruption on the thighs, buttocks and over the scapular area. An asymmetrical eruption of this type suggests bites by bugs. I inquired particularly about the fresh lesions, and a relative who was with the child pointed out lesions on the arm that were found this morning, with definite central puncta, which were yellowish, but characteristic. They may not have been due to bedbugs, but the relatives said there were plenty of them in the house.

DR. JOSEPH GRINDON, St. Louis: It is peculiar that no other children in the family were affected.

HYDROA AESTIVALE. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

B. B., a girl, aged 12, had a disorder of from three to four years' duration. The exposed portions of the body were involved with erythematous patches, associated with macules and papules, followed by crusting. There was no scarring, but some burning and pruritus. The lesions were said to appear in February and persist through the summer, in varying degrees of severity. No other members of the family were affected. The Wassermann reaction was negative, the tuberculin test, strongly positive. Examination of the blood showed: red cells, 3,700,000; white cells, 8,000; hemoglobin, 70 per cent.

DISCUSSION

DR. HOWARD FOX, New York: I am sorry to disagree again with the diagnosis of hydroa aestivale, for much the same reason as in the former case. There were no vesicles, the ears were not involved, and the eruption was pruritic. I suggest a diagnosis of prurigo.

DR. FRED WISE, New York: I agree with Dr. Fox. Establishment of a differential diagnosis is sometimes aided by the demonstration of an abnormally

high amount of hematoporphyrin in the urine of patients with hydroa, as compared with that of patients with prurigo.

DR. GEORGE M. MACKEE, New York: I should not care to make an unequivocal diagnosis of prurigo mitis, because the eruption, while definitely suggesting prurigo mitis, is limited to the exposed parts and occurs only after exposure to the sun. The face, the neck and the extensor surfaces of the forearms where they were exposed to the sun are involved, and there have been occasional attacks on the legs but only after exposure to the sun. There are no lesions on the covered parts of the body, where one would expect to find lesions if the condition were prurigo mitis. In addition to the suggestion made by Dr. Wise, I should suggest that skin tests with light be made. Urticaria of the papular type and ordinary urticaria, as well as certain other conditions, can be caused by sensitization to light as well as be precipitated by light. I think that we are dealing here with a case of sensitization to light.

DR. JEFFREY C. MICHAEL, Houston, Texas: I have great trepidation in disagreeing with the men who taught me dermatology, but I feel that this case could be classed as prurigo aestivale, which is a recognized entity. The fact that the lesions appeared on the portions of the body exposed to light makes this probable. A test for sensitization to light was made recently. The mother took down the stocking at the knee and showed me fresh lesions where the skin had been exposed to sunlight just a day or two previously. I should offer a diagnosis of prurigo aestivale, which has been proved by experiments to be due to sensitization to light.

DR. JOSEPH GRINDON, St. Louis: I agree with the diagnosis of prurigo, whether aestivale or mitis, but I think that the statement of Dr. Wise should be qualified, as hematoporphyrin is not found in all cases of hydroa aestivale. There is no quantitative test for hematoporphyrin beyond a deepening of the normal lines in the spectrum.

DR. W. H. GOECKERMAN, Rochester, Minn.: There is no question that the patient shows sensitization to light, but I wish to call attention to the fact that there are cases that are not true hydroa aestivale that give a picture of a dermatitis in which it is possible to demonstrate hematoporphyrin if one searches carefully enough. One of the problems is that one must not use a test that is too sensitive, for it seems that if the test is sufficiently delicate, hematoporphyrin may be found in practically all normal urine.

DR. FRED WISE, New York: The differential diagnosis between hydroa vacciniforme and prurigo rests largely on the presence, in the former, of deeply scarred and atrophic lesions on the ears, and on the back of the hands and cheeks; this feature of scarring is absent in both patients who were presented. I believe that this deep-seated vacciniform scarring is the main differential point between the two diseases.

ULCER (ARTEFACT?). Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

Mrs. A. C., aged 65, presented an ulcer of the inside of the left cheek, of two years' duration. Biopsy had proved it to be nonmalignant. A culture showed Streptococcus viridans, Staphylococcus albus and Micrococcus catarrhalis.

DISCUSSION

DR. SAMUEL AYRES, JR., Los Angeles: The patient said that the lesions in the month developed about the time she began to wear a new upper plate. It seems a reasonable possibility that something in the denture acts as an irritant, and I believe that it would be worth while to make a test of the plate on her skin. The patient also said that when she leaves the plate out for four weeks the lesion heals.

Dr. O. H. Foerster, Milwaukee: I think that this patient has a geographic tongue of the ordinary type and, in addition, a superficial ulceration that I did not consider as traumatic or as due to the denture worn. In the instances of irritation of the oral mucosa that I have seen in which materials entering into the composition of the denture were responsible, the entire mucous membrane in contact with the denture showed the inflammatory reaction. This woman has a history of taking various drugs frequently, and I think this may have some etiologic bearing and should be investigated.

Dr. Richard S. Weiss, St. Louis: The woman has a geographic tongue, and probably the person who noticed it called her attention to it and to her mouth; she also wears a plate, which is another reason why she pays attention to her mouth. The irregular, ragged appearance of the lesions leads me to believe that she has a habit of chewing her cheek, thus causing the ulceration. I am inclined to believe that the ulcer is an artificial lesion.

Dr. E. J. Trow, Toronto: When first observed this patient presented an ulcer that was almost square. The history shows that she had not worn the plate for two months, yet the ulcer persisted. The condition has improved somewhat in the last few days; why, I do not know.

Lupus Erythematosus. Presented by Dr. David King-Smith, Dr. E. J. Trow and Dr. H. A. Dixon.

Mrs. A., aged 39, stated that her cutaneous disorder had been present for eighteen years, and that it appeared three or four years after severe sunburn with blistering. Ten years previous to presentation she had received ten roentgen treatments on the face, which were followed by severe dermatitis, and two years later radium therapy was followed by a severe local reaction. About that time an ulcer developed in the involved area in the right cheek; it would improve at times and then break down again.

An interesting point in the history was that the ulcer, though resembling an epithelioma, healed completely following fourteen treatments with gold sodium thiosulphate. It broke down again and at the time of presentation was again healing under a second course of therapy with a gold compound.

DISCUSSION

Dr. Richard S. Weiss, St. Louis: This case illustrates the fact to which Dr. Mook called attention, the relationship of light and lupus erythematosus. I wish to call attention to the fact that the patient stated that every time she received an intravenous injection of a material which I presume was a gold salt, her entire body itched. When she first received the injections, the itching was very severe, coming on three or four hours after the injection. Later it was less marked, and now when she receives an injection the itching is tolerable. Dr. Engman has been warning us about the danger of the use of gold compounds in the treatment for lupus erythematosus and the possibility that it may cause the discrete types to assume the disseminated form. He advises that a blood count be made before each injection and if any tendency to leukopenia is found, treatment with gold compounds should be discontinued.

Dr. George M. MacKee, New York: I understand that the ulcer on the right cheek healed spontaneously; the skin remained normal for a time and then the ulcer reappeared. The patient gave a history of having had both radium and roentgen dermatitis. We are probably dealing with the results of both radiodermatitis and lupus erythematosus. The fact that the ulcer appears and disappears certainly compels one to think of dangerous potentialities. The case should be kept under observation, and if at any time the ulcer should persist for several months, it should be removed by a plastic operation. If this is not done, epithelioma of the squamous cell type is likely to appear within a few years.

ADENOMA SEBACEUM: NEVOID GROWTHS ABOUT TOE-NAILS. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

M. M. S., aged 45, had lesions involving the face and toes, which had been present for thirty years and probably were congenital. The blood was normal. Carbon dioxide snow had been used on several of the lesions about the toe-nails.

DISCUSSION

DR. FRED WISE, New York: Morbus Pringle is a name suggested by Urbach of Vienna for a syndrome characterized by adenoma sebaceum lesions of the face, warty and papillomatous lesions of the peri-ungual regions of the fingers and toes, as well as of the nail-beds, and sometimes associated with mental inferiority, as in ordinary cases of adenoma sebaceum.

DR. LLOYD W. KETRON, Baltimore: I cannot understand exactly what sort of nevi were meant in referring to this case as nevoid growths around the toe-nails. My impression was that they were ordinary verrucae. It seems to me that a histologic examination would be necessary to establish the diagnosis definitely, and I should like to know what was found if such an examination was made.

DR. HAROLD N. COLE, Cleveland: This case represents well certain cases which have been described by Leloir, and about which certain physicians in Jadassohn's clinic have written. In the lesions around the nails, there is not only atrophy but also a dystrophy of the nails. This is an interesting example of one of the dystrophies.

DR. GEORGE M. MACKEE, New York: There are several reports in the literature claiming excellent results obtained in cases of adenoma sebaceum with blistering doses of ultraviolet radiation. Dr. George M. Lewis tried the method on two patients in my clinic, and the result was a substantial improvement. The water-cooled lamp was used, and dehematization was obtained by pressing the quartz frontpiece firmly against the skin.

DR. H. A. DIXON, Toronto: A section taken from a lesion of a toe was reported as showing hemangioma. The patient shows mental defects.

SCROFULODERMA. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

B. H., aged 12, had a cutaneous skin disorder that involved the scalp and legs. The lesions were recurrent, slow-healing abscesses that had been present since the age of 9 months. The child had not been able to talk.

DISCUSSION

DR. FRED WISE, New York: I should like to know whether this diagnosis is accepted by the majority. I should tentatively suggest the possibility of acne conglobata, and perifolliculitis capitis abscendens et suffodiens. The lesions on the scalp are hypertrophic scars, apparently completely organized in some areas. The eruption on the temporal and parietal regions resemble the lesions Hoffmann has described as perifolliculitis, although the lesions on the hairy areas are unusual. I merely offer this diagnosis tentatively. I understand that examination for tuberculosis has not been made. If the condition is scrofuloderma, the finding of tubercle bacilli should be relatively easy.

DR. LLOYD W. KETRON, Baltimore: I think it might be better to call the condition tuberculosis colliquativa.

DR. SAMUEL AYRES, JR., Los Angeles: I think we should call attention to the apparent endocrine situation in this patient, as observed by the extreme dryness of the hair of the scalp, the absence of eyebrows and the inability to talk.

DR. H. E. MICHELSON, Minneapolis: I think this case might be included under the general definition of chronic pyodermias, especially the type described by

Hoffmann. Scrofuloderma occurs rarely in the scalp; usually the condition appears over bony prominences or gland-bearing areas. However, this type of tuberculosis may develop in the lymphatics of the skin without an underlying focus. Even in scrofuloderma, the finding of tubercle bacilli is not easy, but it has been simplified by Dittrich's technic.

DR. G. V. BEDFORD, Winnipeg: One sees a great many cases of this condition in Western Canada. This patient has lesions in the vicinity of the knee joints as well as in the glands of the neck. I think that scrofuloderma should be considered.

ACRODERMATITIS CHRONICA ATROPHICANS. Presented by DR. DAVID KINGSMITH, DR. E. J. TROW and DR. H. A. DIXON.

E. S., aged 22, presented a cutaneous disorder that had been present since the age of 6 months. The hands, nose, legs and feet were involved. The skin was dry, atrophic and parchment-like in these areas, and there was a history of ulceration in the winter months. The hands, nose and toes were always cold and did not perspire. No paling of the fingers or toes had been observed. The blood was normal. A right lumbar sympathectomy had been performed, with only slight improvement.

DISCUSSION

DR. JOSEPH GRINDON, St. Louis: This case is probably one of mixed scleroderma. The right foot shows a distinct sclerodermic condition, and on the hands and arms there is atrophy of the skin, apparently a later stage of scleroderma.

DR. FRED WISE, New York: At first sight the tentative diagnosis of acrodermatitis atrophicans is acceptable, but a more prolonged examination of the patient reveals the presence of lesions on the nose. The nose and both ears are practically covered with telangiectasia. There is absence of the so-called ulnar band and no evidence of a tibial band or of the so-called juxta-articular nodules that occur in acrodermatitis. Although there are many features that remind one of acrodermatitis, there are too many clinical features that are against that diagnosis. I should suggest the possibility of poikiloderma. I think that as this condition progresses, one of the four types of poikiloderma that have been described in the literature will develop.

DR. H. R. FOERSTER, Milwaukee: I wish to present the diagnosis of lupus pernio and suggest consideration of the telangiectatic type of lupus erythematosus. I agree with Dr. Wise regarding the features of acrodermatitis and the scleroderma-like infiltrate of the legs characteristic of acrodermatitis chronica atrophicans.

DR. GEORGE M. MACKEE, New York: In addition to the features against the diagnosis of acrodermatitis mentioned by Dr. Wise, I noticed that there were no subcutaneous nodules on the thighs and near the elbows, which frequently develop in cases of long standing. I agree with Dr. Foerster that some type of tuberculosis should be considered because of the condition of the nose and the ears and the ulcers occurring on the feet during cold weather, all of which suggest the possibility of pernio. The eruption is not sufficiently polymorphous or sufficiently like "roentgen-ray skin," to permit the diagnosis of poikiloderma at this time.

DR. JEFFREY C. MICHAEL, Houston, Texas: This patient presented atrophic areas on the ears and nose that suggested lupus pernio. On the thighs were ill defined areas of telangiectasia and over the knees bluish patches giving the impression of circulatory stasis, and the toes and portions of the feet showed firm scleroderma-like induration (sclerodactylia). The entire picture is involved, but it seems to me that it can be interpreted as the result of a chronic systemic tuberculosis. The lupus pernio fits directly into this idea; the vascular changes and other features may reasonably be the consequence of a long-continued infectious process acting on the vascular apparatus of the skin, either directly or through the autonomic-endocrine apparatus.

DR. E. J. TROW, Toronto: I wish to thank the members for their discussion of this case, for it has been a particularly interesting one. We have thought of the condition shown in the nature of Raynaud's disease and have treated it as a circulatory disorder. The improvement following right lumbar sympathectomy was marked, but not so marked as was expected. There has been improvement in the temperature of the right foot as compared with the left, and it is more comfortable.

TELANGIECTASIA (HEREDITARY HEMORRHAGIC). Presented by DR. HARRIS GREY.

Mrs. F., aged 26, complained of frequent severe epistaxis and general weakness. Examination showed telangiectasis of the mucous membranes and a few small lesions over the face, shoulders and hands. The hemoglobin was 60 per cent (Sahli-Leitz). The father of the patient was also presented; he had a marked degree of telangiectasia of the palms, tongue, feet and body.

DISCUSSION

DR. CHARLES M. WILLIAMS, New York: This case interested me, as two members of the family were involved; the father had typical telangiectasis of the face, which could be recognized across the room. The daughter showed very little telangiectasis. There was a lesion on the bridge of the nose and on the dorsum of the tongue. The patient gave a history of having nosebleed. This is just the kind of case the committee on heredity would be glad to record in full. I would be interested to know how many of the patient's uncles and aunts had the condition and how many children. The essential features are the following: (1) the telangiectasis, (2) the hemorrhages and the epistaxis and (3) the familial character. In some families one member shows epistaxis and no telangiectasis and another has telangiectasis and no epistaxis. It is my belief that this disease is very common. If one questions every patient who has stellate lesions, many give a history of epistaxis. I hope that the physician who has this patient in charge will report the family history in full for record.

DR. E. J. TROW, Toronto: The family history we have includes four generations. Only two members of the family in the present generation are not affected. The family tree has been well worked out.

NOTE: Since the presentation of these two patients, the woman has had a miscarriage, without excessive hemorrhage. Soon after presentation, the father died suddenly of what was diagnosed as intestinal hemorrhage. Unfortunately, no necropsy was obtained.

DARIER'S DISEASE. Presented by DR. E. J. TROW.

A man, aged 25, had a condition of fifteen years' duration, which appeared following measles. The lesions were located on the scalp, legs and body.

DISCUSSION

DR. CLARK W. FINNERUD, Chicago: I thought that the degree of hyperkeratosis on the legs was interesting, in view of the fact that it was so marked, but I wish to call attention to the lesions on the hard palate. They were not so pronounced in this patient as ordinarily, but since my attention was called a few years ago to lesions of Darier's disease occurring on the mucous membrane, I have looked in the mouth in each instance, and I think that without exception I have found lesions on the palate. Dr. Michelson called my attention to lesions on the palpebral conjunctiva in a patient whom we saw at Ann Arbor last year.

PSORIASIS (PUSTULAR). Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

Mr. H., aged 49, presented a disorder of eighteen months' duration. It first appeared on the side of the foot as a blister, spread to the toes, became pustular, especially near the toe-nails, and then involved the fingers and finger-tips. The lesions were always pustular, developing in crops to form lakes of pus level with the surface of the skin. The lesions terminated as dry, flaky scaling patches. There had also been lesions of psoriasis in the scalp and on the knees, and elbows. Examination of the blood, urine, scales and cultures grown on all mediums gave negative results. Smears showed a few gram-positive cocci.

DISCUSSION

DR. OLIVER S. ORMSBY, Chicago: I have had experience with cases of pustular psoriasis, and I feel justified in saying something about this condition in connection with this case. The disease has been studied so little that I do not believe that all the clinical manifestations that it may present have been recorded as yet. I have had two sisters under observation for several years in whom the condition has run the course recorded in other cases. These patients have lesions in much the same location as those in ordinary psoriasis, the extremities, the trunk and the scalp being involved. At times, all the lesions are psoriasiform; at other times pustules are intermixed. The patients have been in the hospital occasionally; the early lesions are small, sterile pustules and resemble the early pustules of dermatitis repens. During exacerbations, the patients have a temperature of from 101 to 102 F. or more. Pustular paronychia with shedding of the nails occurs; new and normal nails subsequently develop. We have done much experimental work in these cases without much success. The case we just saw presents the appearance of dermatitis repens. None of the pustular lesions are present; however, there is a history of them. The thickening and scaling of the palms and the distorted nails present the clinical picture seen in cases of dermatitis repens of rather long duration.

DR. JOSEPH GRINDON, St. Louis: Did the condition co-exist with arthritis deformans in any of these cases?

DR. OLIVER S. ORMSBY, Chicago: Arthritis deformans has not been a feature of the cases I have observed.

BLASTOMYCOSIS. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

Mr. W. F., aged 32, presented a condition of from nine to ten months' duration, which involved the right foot and the right leg. Before treatment, the lesion consisted of a papillomatous area on the plantar surface, 3 inches (7.6 cm.) in diameter, reddish brown, and elevated from ⅛ to ¼ inch (3 to 6 mm.). The surface looked like a rubber sponge.

Blastomyces had been found on biopsy, direct smear and culture. The Wassermann reaction was negative. The blood showed 5,400,000 red cells, 15,800 white cells, hemoglobin 100 per cent. Treatment had consisted of intravenous injections of sodium iodide and roentgenotherapy applied to the foot.

DISCUSSION

DR. OLIVER S. ORMSBY, Chicago: I have never seen a patient with blastomycosis in whom one could not find these miliary abscesses in the margin of the lesion. Sometimes they do not show until the margin is sponged with alcohol. In most cases there are many abscesses, and they are always found in the inflammatory border. The miliary abscesses of blastomycosis are white and contain mucoid material.

DR. FRED D. WEIDMAN, Philadelphia: I agree with the diagnosis, but wish to comment on the fact that the patient does not show the miliary abscesses that are considered a differential diagnostic point of blastomycosis. So far as the cases in Philadelphia are concerned, such lesions are not seen. One sees so few cases of this type in Philadelphia, however, that I should like to know about the cases seen elsewhere.

DR. LLOYD W. KETRON, Baltimore: A few days ago I saw a colored man with a warty lesion on the sole about the size of a silver dollar. On the inner side of the knee of the same leg there was an ulcer the size of half of the palm, and between this ulcer and the one on the sole in a direct line were four or five subcutaneous nodules or abscesses. In these abscesses, numerous blastomyces were found both by microscopic examination and by culture. There were no definite miliary abscesses around the border of either the lesion on the knee or the one on the sole.

DR. OLIVER S. ORMSBY, Chicago: In generalized cases of blastomycosis, dissemination occurs through the blood stream, and frequently the lungs are the early site of the infection. In such cases the cutaneous lesions are subcutaneous nodules and abscesses and cutaneous ulcers. None of these lesions resembles those of cutaneous blastomycosis.

DR. ISAAC R. PELS, Baltimore: Many years ago a patient was seen who had an initial lesion on his large toe and lesions running up along the leg on the thigh much like those described by Dr. Ketron. In the lesions, which were subepidermic and suggested sporotrichosis, the blastomyces were present and cultures were easily secured.

DR. FRED D. WEIDMAN, Philadelphia: In my patient the lesions did not extend up the arm, but there was a definite deep subcutaneous cord as in lymphangitis. The question arose whether the cord was a secondary staphylococcic infection, and to answer this question I had the surgeon take a specimen for biopsy (at the level of the biceps), and blastomyces were demonstrable in the sections. There is probably nothing absolute about any rule in medicine; even certain forms of sarcoma (lymphosarcoma) metastasize by the lymph. In blastomycosis it is possible to find a lymphatic extension, although, as Dr. Ormsby has stated, a blood-borne extension is the rule.

DR. OLIVER S. ORMSBY, Chicago: In my experience in Chicago I have seen cases in which blastomycosis was disseminated throughout the body only by way of the blood stream. I have watched carefully in a large number of cases for evidences of lymphatic transfer, but have not observed it. The case presented and the discussion appear to prove that lymphatic dissemination is possible.

DR. H. A. DIXON, Toronto: The first lesion appeared on the sole, and some months later abscesses resembling indolent furuncles appeared on the leg below the knee, later becoming verrucous.

A CASE FOR DIAGNOSIS. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW, and DR. H. A. DIXON.

T., a boy, aged 7, had a peculiar condition that had been present since birth. The skin was soft and doughy, and there were many scars over the legs. The history stated that the skin and subcutaneous tissues ruptured with the least injury, without pain or discomfort. At times the broken skin had been sutured, but the sutures had pulled out of the skin and subcutaneous tissues.

DISCUSSION

DR. SAMUEL AYRES, JR., Los Angeles: I think that this case is one of cutis hyperplastica. Several years ago there was a case at one of the clinics that was practically a duplicate of this, including the scarred appearance and a history that the patient scarred easily on trauma. There were no blebs or vesicles, but the skin could be extended as in this case.

A Case for Diagnosis: Endothelioma? Presented by Dr. David King-Smith, Dr. E. J. Trow and Dr. H. A. Dixon.

A. H., a boy, aged 7, presented indurated, erythematous, ringlike areas, below the right axilla, of about three years' duration. The history stated that the right axilla was injured when the child fell on a sleigh, and that these areas were black and blue. As the color faded from the bruise, rings appeared, and they had not varied in size, except with the growth of the child.

Examination of the chest revealed nothing abnormal. The Wassermann reaction was negative, the tuberculin test positive. Examination of the blood showed 3,500,000 red cells, 4,000 white cells, and hemoglobin 80 per cent. A differential count showed: polymorphonuclears, 60 per cent, and lymphocytes, 40 per cent.

DISCUSSION

Dr. H. E. Michelson, Minneapolis: I think that this is an extraordinary case, a distinct entity in tumor pathology, but not a clinical entity. Microscopically, I believe the diagnosis would be hemangio-endothelioma. The clinical characteristics are not fixed. In the few cases that I have seen some of the lesions resembled senile angioma, while others resembled pyogenic granulomas, and in another instance the lesion was merely an elevated indurated plaque. In one of our patients the lesion was on the lip and was excised, but metastasis followed and the patient succumbed. In this instance, I should suggest wide excision and treatment as though the case were epithelioma.

Dr. J. Frank Fraser, New York: I agree with the remarks of Dr. Michelson. This is one of the cases in which I think all of the members will agree that it was impossible to make a diagnosis from the clinical features. A study of the sections leads me to agree with Dr. Michelson's diagnosis of capillary hemangioma. These growths are sometimes malignant and for that reason should be removed.

Dr. Fred Wise, New York: I also agree with the last two speakers, especially regarding the microscopic observations, but I call attention to the fact that the clinical picture is much like that of the Spiegler-Fendt sarcoid. The circinate lesion, the clear center and the surrounding erythematous plaque is almost a duplicate of the clinical picture seen in this variety of sarcoid.

Urticaria Pigmentosa. Presented by Dr. David King-Smith, Dr. E. J. Trow and Dr. H. A. Dixon.

A. B., a boy, aged 10 months, presented a condition of seven months' duration. Firm, brownish papules that were irritable in the early stages and occasionally scaly were scattered over the trunk. The Wassermann reaction and the tuberculin test were negative. Examination of the blood showed 4,000,000 red cells, 6,400 white cells and hemoglobin 70 per cent.

DISCUSSION

Dr. H. A. Dixon, Toronto: We wondered if this lesion might be due to a drug, although we were unable to trace the ingestion of any drug.

Dr. Fred D. Weidman, Philadelphia: This case recalls a patient recently presented at the New York Academy with a borderline case between xanthoma and urticaria pigmentosa. Dr. Pollitzer, Dr. Fraser and I had a conference on the sections, and finally reported that there were cells of xanthoma. I felt, with Dr. Combes, that the case was an example of the nevoxantho-endothelioma which MacDonagh has described. There is so much resemblance of that case to this one that the opportunity of performing a biopsy on this patient should not be passed over.

SYPHILID (RESISTANT): PSORIASIS. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

Mr. A., aged 27, had had an initial sore and a sore throat in December, 1930. The lesions were micaceous, scaling, papular and psoriasis-like areas, which had extended; some had ulcerated in spite of intensive arsenic and bismuth therapy. The Wassermann reaction was strongly positive. The blood was otherwise normal.

DISCUSSION

DR. JAMES R. DRIVER, Cleveland: I felt that this was a rather characteristic case of late secondary psoriasiform syphilid.

DR. CHARLES C. DENNIE, Kansas City: I should like to suggest malarial therapy as treatment for these resistant lesions. We now know from work that has been done and that is being done at present that malaria clears up such lesions. They will recur after three or four months, but subsequent treatment with the ordinary remedies seems to have a good effect when it had no effect previously.

DR. CLARK W. FINNERUD, Chicago: I did not see the patient, but thought the histologic section compatible with the diagnosis offered.

DR. EARL D. OSBORNE, Buffalo: I agree that this is a late secondary syphilid of the recurrent type and agree with Dr. Dennie that it would be in order to use fever therapy. I have used it in two recurring cases of late secondary syphilis and followed it with the usual treatment, with excellent results. In the Essen Skin Clinic and Kyrle's clinic they have concluded that the time to use malaria is after the second year of the infection. In some cases that have not responded to routine treatment, excellent results have been obtained with fever therapy. It must also be followed by routine treatment.

DR. E. J. TROW, Toronto: The picture changes in this case; one day we have thought it psoriasis, the next day, syphilis. We are still in that position, but inclined to view the case as a syphilid resistant to treatment.

DERMATITIS ARTEFACTA. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

Mr. C. V., aged 21, presented lesions of eighteen months' duration, on the left arm and both lower extremities. The lesion on the arm followed a tuberculin test. The ulcer healed slowly and resulted in a keloidal scar. Nine months later, a large ulcer developed from a small white papule on the right leg, and two months previous to presentation bullae developed following a small white papule on the left leg. The ulcer on the right leg had been excised. A neurologic diagnosis of hysteria had been made.

DISCUSSION

DR. JOSEPH GRINDON, St. Louis: The fresh lesion on the left forearm was bounded by straight lines, meeting at sharp angles.

DR. CHARLES C. DENNIE, Kansas City: I inquired carefully into the patient's history. I sent a patient who had a similar condition to the Mayo Clinic; he had lesions that formed rapidly and grew to an enormous size within a few days. They healed after cauterization, but after a while more would form. At the Mayo Clinic the case was studied completely and no etiologic factors were found. They thought at first that the condition was an artefact and then that it was a drug eruption. The patient's leg was placed in a cast, and the lesions did not heal. It was found that the patient was taking phenolphthalein, and he noticed that the ulcers occurred when he took that drug. We never could get him to take any more of it, and now, after five years, the lesions have not recurred. He chewed Feenomint gum, as does the patient presented.

DR. E. J. TROW, Toronto: There is a family history of tuberculosis, and the patient's father has active tuberculosis. The first lesion to develop in this patient followed a tuberculin skin test. New lesions developed at intervals of about six months. The patient is of a marked hysterical type, open to suggestion, and after careful examination, the members of our neurologic department are in accord with the idea that the mental condition is compatible with self-produced lesions.

TUBERCULOSIS. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

L. B., a girl, aged 14, presented a disorder of the nose, tongue and fingers that had been present for from three to four years. The lesion on the tongue was ulcerative, and there was a granulomatous mass about the nose; the fingers were markedly enlarged. The Wassermann reaction was negative. Biopsy revealed tuberculous structures. The patient's mother at one time had had a positive Wassermann reaction and was treated for syphilis, but at the time of presentation gave a negative reaction to the Wassermann test.

DISCUSSION

DR. FRED D. WEIDMAN, Philadelphia: Incidentally, two of the patient's fingers show a high grade of congenital hypertrophy. Roentgenograms made in such cases show that they are examples of true hypertrophy and not elephantiasis.

DR. OLIVER S. ORMSBY: The patient had annular serpiginous-like lesions on the nose and face and lesions on the tongue. The case suggested syphilis and blastomycosis, but I believe the condition is verrucous tuberculosis, and that the lesions on the tongue are also tuberculous.

ACNE CONGLOBATA OR SCROFULODERMA? Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

Mrs. J. S., aged 19, presented generalized lesions of fifteen years' duration. The family history stated that the father died of diabetes mellitus and the mother of heart disease.

TUMORS, FATTY BLASTOMYCOSIS OR ACNE CONGLOBATA? Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

E. S., aged 40, had a condition of twelve years' duration. When first seen nine years before presentation he had granulomatous lesions, with numerous miliary abscesses. The initial lesion appeared in the temporal region. On March 13, 1922, blastomycetes were found. Under roentgenotherapy and the administration of potassium iodide the condition improved. At a later date, he entered the Toronto General Hospital, and the history stated that Blastomyces was again demonstrated. The patient then disappeared and was not seen for several years.

DISCUSSION

DR. H. E. MICHELSON, Minneapolis: I do not wish to appear as an authority on acne conglobata, but I cannot accept the diagnosis in the first case as an example of that condition. The second case, which was presented as one of blastomycosis, however, has all the classic signs of acne conglobata. Maybe the term acne conglobata is an unfortunate one, for there are arguments against this disease being related to acne. As a rule, the patients are past the usual acne age, and they may or may not have had ordinary acne at adolescence. The location is not typical; the lesions may be scattered over the body, and remissions are common. There is a great amount of pus, but it oozes so slowly that it forms a crust, and when that has disappeared a depressed or bridge scar, with comedones included in the scar tissue, remains. I believe that many of the lesions are

produced by auto-inoculation, and it will be recalled that Professor Oppenheim reported that tuberculosis developed at the periphery of the lesions in some of the patients.

DR. HAROLD ORR, Edmonton, Alberta: I consider the first of these cases to be steatocystomas or multiple symmetrical cutaneous cysts, associated with a mild degre of acne. Of course, the scars are the result of infection in some of the cysts. The eruption is more widely distributed than in any case I have seen; it is most unusual for the face, forearms and hands to be affected. The lesions ordinarily do not tend to break down, but the large number of scars in this case is perhaps not in disproportion to the number of cysts present.

DR. CLARK W. FINNERUD: I believe that some of the lesions on the forearms and arms are of the type that Dr. Ormsby and I described a short time ago as steatocystoma multiplex, except that the lesions are differently located. Most of the cystic lesions were not of that type, however. I did not make the fine distinction that Dr. Michelson did and merely considered the condition otherwise acne conglobata.

DR. DAVID KING-SMITH, Toronto: I saw the patient last presented several years ago, but he would not follow out the treatment for more than a few weeks. He then disappeared for three or four years, and now returns with this condition. The case is of twelve years' duration at least. When he was first seen a blastomycetic organism was found.

DR. OLIVER S. ORMSBY, Chicago: The first of these patients had the deep acneform lesions, and the general picture was that described by Dr. Michelson as acne conglobata, but from the discussion I am afraid that there might be a misunderstanding about the disorder Dr. Finnerud and I described recently under the title steatocystoma multiplex. In the latter disorder the lesions are not acneform. It is characterized by lesions varying in size from that of a pinhead to that of a coffee bean or larger. They are smooth, of the normal hue of the skin or yellowish, and the larger ones are soft. They exude pure fat, which at times resembles olive oil. We proved that the lesions were retention cysts. In one patient more than 1,500 lesions have been incised and the contents expressed, without recurrence. It may be that a few retention cysts are present on the arms of the patient presented.

DR. FRED WISE: Is it the consensus that the last of these cases is to be diagnosed as acne conglobata? I ask on account of the publication of case reports in the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY. The case was presented as one of blastomycosis, and Dr. King-Smith has told us that he found a blastomycetic organism in the lesion twelve years ago. At present the case does not resemble blastomycosis. The question is whether the case should be published in the ARCHIVES as one of blastomycosis, mycosis fungoides or acne conglobata.

DR. H. A. DIXON: The first of these patients has undergone a series of treatments, and whether or not it is a coincidence, yeast is the only thing that seems to have benefited him in the least.

A CASE FOR DIAGNOSIS. Presented by DR. DAVID KING-SMITH, DR. E. J. TROW and DR. H. A. DIXON.

Mr. D., aged 40, presented a deep ulcer on the outer side of the left leg, which had been present for four years. A small ulcer which was gradually enlarging was curetted, but lower down on the leg a mass appeared which ruptured. The Wassermann reaction was negative.

DISCUSSION

DR. FRED D. WEIDMAN, Philadelphia: I think the condition is sarcoma and the only thing to be determined is what type it is. It probably started in the tendon sheaths. Xanthosarcomas of the legs are likely to start from this location, and the history of these lesions is that they are much less fulminant in their course than other such lesions. There are many giant cells in this tumor, which is not

uncommon in tendon sheath sarcomas. But to diagnose giant cells in sarcoma does not get one far. Perhaps the most significant fact is that many of these neoplastic cells are stellate, so that this particular lesion may be classed as mixed cell sarcoma with giant cells.

DR. J. FRANK FRASER, New York: The picture appeared to me to resemble that seen in giant cell sarcoma or epulis. If the growth is malignant, there should have been involvement with metastases before this. Thorough removal should effect a cure.

PITTSBURGH DERMATOLOGICAL SOCIETY

CLAUDE B. NORRIS, M.D., *Secretary*

Regular Meeting, Sept. 17, 1931

JAMES H. FISCUS, M.D., *President, in the Chair*

KERATOSIS FOLLICULARIS. Presented by DR. LESTER HOLLANDER.

Miss A. R., aged 21, presented a generalized, symmetrical eruption of twelve years' duration. The lesions were discrete and confluent; they were pinpoint-sized, reddish-brown papules that were covered with a grayish-black, firmly adherent scale. The entire eruption had a nutmeg grater texture. The condition was symptomless.

The treatment was intravenous injections of sodium thiosulphate, with whole blood given intramuscularly. The skin of this patient was tested and found to be sensitive to the legumes, beans, peas, etc. These have been removed from her diet. She seems to be improving. Several physicians who had seen the patient previously commented favorably on the results of treatment.

VITILIGO WITH CENTRAL PIGMENT NEVUS. Presented by DR. STANLEY CRAWFORD.

D. H., aged 6, a white girl, presented numerous large areas of vitiligo over the face, neck, trunk and extremities of two years' duration. In one area of vitiligo on the trunk there was a light brown pigmented nevus about 7 cm. in diameter.

DISCUSSION

DR. L. G. BEINHAUER: The question of gold sodium thiosulphate for this condition is again brought up. My experience has been unfortunate, first, because of the poor clinical results and, secondly, because of the toxic reactions to gold.

DR. B. A. GOLDMANN: At present three patients are under treatment with gold sodium thiosulphate, and one of them has improved markedly.

DR. LESTER HOLLANDER: We have obtained no beneficial effects in ten patients. The patients were also treated with roentgen rays.

DR. H. T. PHILLIPS: I have treated three patients with vitiligo with gold sodium thiosulphate, with negative results.

DR. STANLEY CRAWFORD: The presence of the pigmented nevus in the center of a vitiligo patch was coincidental in this case, though it might be called an area of perinevic vitiligo. This was not a case of centrifugal vitiligo, of which I have had three cases. I felt that most cases of leukoderma acquisitum centrifugus were really areas of perinevic vitiligo in that the pigmented mole was usually present before the vitiliginous process developed.

ADENOMA SEBACEUM. Presented by DR. L. G. BEINHAUER.

Mary K., aged 15, stated that the eruption began ten years previously as a few "red pimples" which persisted and increased in number, involving the middle third of the face at the time of presentation. At the age of 13 the menstrual periods began. They were irregular and associated with a marked menstrual flow. For the past year the menses had appeared at intervals of two weeks. The child is somewhat backward in mental development and at present is assigned to a school-rating three years below that normal for her actual age.

Examination revealed a symmetrical eruption involving the forehead, cheeks, nose and chin, consisting of numerous closely set, firm and soft globular and punctate lesions ranging in size from that of a pinhead to that of a large pea, associated with numerous capillary ramifications of the skin. The vaginal examinations repeatedly have given negative results. The Wassermann test of the blood was negative. Basal metabolic readings were —12 and —18. Examination of the blood showed: hemoglobin, 70 per cent; red blood cells, 3,750,000; white blood cells, 10,500; differential count: polymorphonuclears, 71 per cent; lymphocytes, 28 per cent; basophils, 1 per cent, and blood pressure, 104 systolic and 68 diastolic. The pulse was regular and soft; the rate was 88. Numerous infected teeth were removed recently. The diagnoses of the internist and gynecologist were hypothyroidism and metrorrhagia, respectively. Thyroid medication was given but was not tolerated by the patient. The present weight is 114½ pounds (51.9 Kg.).

DISCUSSION

DR. STANLEY CRAWFORD: Most patients with adenoma sebaceum have fairly well developed intelligence, and there is no reason to consider that every patient of this type has a low intelligence ratio. If the meninges present small fibromas, there may be some faulty intellectual development.

DR. H. T. PHILLIPS: The best treatment is destruction by actual cautery. Not all such patients are mentally deficient.

DR. LESTER HOLLANDER: I wonder whether all the patients with adenoma sebaceum are mentally deficient. This reminds me a little of the situation in angiokeratoma. Regarding treatment, I should combine mammary and ovarian extracts with thyroid, 10 grains (0.65 Gm.) of the mammary and 10 grains of the ovarian extract with ¼ grain (0.0162 Gm.) of thyroid. This treatment may be better than thyroid alone.

A CASE FOR DIAGNOSIS: SARCOID (?). Presented by DR. H. G. WERTHEIMER.

The patient, a woman, aged 47, married, had never been out of the country, had lived most of her life in the rural districts of Pennsylvania, and had been suffering from the condition for three years. The eruption was always confined to the face, and the first lesion was noticed on the right side of the chin as a nodule, at which time a diagnosis of probable epithelioma was made. A biopsy seemed to confirm this diagnosis. Only a smooth scar remained, around which other reddish brown nodules had appeared, many of which were firm and indurated.

Over the cheeks and nose a butterfly shape was noted, the one on the right side was crescentic and the outer border was definitely elevated at least 1/16 inch, rolled, smooth, nodular, and markedly infiltrated, with scaling toward the center. The inner part of this area was papillomatous, even suggesting a fungoid appearance, and if this lesion were seen on the body one would consider mycosis fungoides. This same appearance was seen on the left side of the face, except that the borders were not as elevated. Scaling was present, and there was itching at times. The Wassermann and Kahn tests of the blood were negative on two occasions. The results of the physical examination were unimportant, except that a cystic or adenomatous goiter was noted.

Treatment had been of little avail. Roentgen treatment plus radium had failed. Potassium iodide had shown little effect. Six doses of neoarsphenamine given at weekly intervals had caused a slight retrogression of the lesions. Since the patient was last seen two weeks previously, more improvement was noted than at any previous time.

DISCUSSION

DR. STANLEY CRAWFORD: I should like to offer a diagnosis of Boeck's sarcoid, since the masses showed a sandlike appearance with numerous dilated capillaries. I felt that there was a possibility of the condition being a lymphogranuloma of the benign type described by Schaumann.

DR. H. T. PHILLIPS: In one case the condition was cleared up by the administration of gold sodium thiosulphate.

DR. LESTER HOLLANDER: I believe that this case is one of tertiary syphilis, for three reasons: (1) the architecture, which on one examination was diagnosed as a carcinoma; (2) the retrogression of the lesion, leaving a crescentic appearance, and (3) the improvement on treatment. I should treat this patient energetically with antisyphilitic therapy.

DR. J. H. FISCUS: I should favor a diagnosis of tertiary syphilis from the clinical appearance alone. Mercury is indicated to provide a positive Wassermann reaction.

DR. H. G. WERTHEIMER: When I first saw this patient the suggested diagnoses were sarcoid, tuberculosis, syphilis and possibly mycosis fungoides, though I had never seen the latter condition on the face alone. On learning from the pathologist that a biopsy had been made and no definite diagnosis arrived at, except that sarcoid, tuberculosis and syphilis had been ruled out, the case became more confusing to me. Later a diagnosis of mycosis fungoides was established, with the following report: The surface epithelium was slightly thickened, but there was no excessive keratinization, the cells being quite regular. The upper part of the corium formed a narrow layer, which in many places was only slightly infiltrated or not at all. The deeper corium showed an intense infiltration of eosinophils, polymorphonuclear leukocytes, plasma cells and relatively few lymphocytes. Most characteristic was the infiltration of thick-walled blood vessels with polymorphonuclear leukocytes. Bands of fibrous tissue of a dense collagenous type formed a large part of the growth. It encircled nodules of inflammatory cell infiltration apparently grouped mainly about the blood vessels. Eosinophils were numerous in such nodules, as were polymorphonuclear leukocytes, and in places plasma cells were abundant. No typical giant cells were found. In addition to the cellular infiltration, there was actual infiltration of the walls of the blood vessels with erythrocytes in some places. Epithelioid cells were absent. A few small blood vessels in the deeper portion showed marked hyaline thickening without inflammatory cells.

XANTHOMA TUBEROSUM MULTIPLEX: MELANOMA. Presented by DR. H. G. WERTHEIMER.

Mr. C. J. H., aged 68, presented one pea-sized, brownish, elevated area, with a central, dark gray discoloration on the right clavicular region. To the left of this was a dime-sized, warty, grayish area with overhanging edges, resembling a horn on the inner margin. This condition had been present for years and was rapidly growing for the past six or eight months.

Over the knuckles and the lateral surfaces of the fingers of both hands and the palmar surface of the little finger of the right hand were round, hard, yellowish nodules ranging in size from that of a pea to that of a penny, distinctly raised above the level of the skin. The condition had started on the little finger of the right hand four or five years previously. Roentgen examination showed no involvement of the bones.

DISCUSSION

DR. LESTER HOLLANDER: I should offer the three following diagnoses: (1) xanthoma tuberosum multiplex, (2) juxtanodular nodes and (3) sarcoid. Only a biopsy would clear up the diagnosis.

DR. EMERSON GILLESPIE: I believe that the lesion on the chest is not a melanoma, but seborrheic keratosis.

DR. H. T. PHILLIPS: The best treatment for xanthoma is surgical excision. I believe that the lesion on the chest is seborrheic keratosis.

DR. J. H. FISCUS: I agree that the lesions on the hands are xanthoma, but the lesion over the right clavicle is a seborrheic keratosis and not a melanoma.

DR. H. G. WERTHEIMER: I feel sure that if you were to see this melanoma lesion in good light there would be no question as to the diagnosis. Because of the age of the patient and of vague intestinal symptoms suggestive of metastasis, surgical procedures were not attempted. The characteristics of the lesions on the fingers — color, firmness, and grouping — left little doubt as to the diagnosis.

A CASE FOR DIAGNOSIS (SCLERODERMA?). Presented by DR. CLAUDE B. NORRIS.

N. M., a boy, aged 12, American born of Italian parents, first presented himself on Oct. 31, 1930, with an eruption on the face, hands and neck, puffiness around the eyes and general thickening of the skin, including the deeper layers and the subcutaneous tissue. Not much itching was noted. The condition had been present for one year; it became better and then worse until the preceding February. The family history was irrelevant.

The lips and face were swollen, puffy and telangiectatic, with small red spots of excoriation. The skin was so bound down that there was great restriction of movement, amounting to practical ankylosis of the important joints, particularly the elbows and knees, and there were edema of the feet and great emaciation.

The Wassermann test was negative.

DISCUSSION

DR. STANLEY CRAWFORD: I thought that the flat red areas on the knuckles, elbows and knees with a slight silvery scale were suggestive of psoriasis. The diffuse brownish and moderate hyperkeratosis and pigmentation of the trunk were suggestive of arsenical intoxication possibly due to the fact that arsenic had been given over a long period of time for a psoriatic condition. The puffiness of the face and lower eyelids supported this view. I should like to offer a diagnosis of psoriasis arthropathica, a type described by Jadassohn. The firm diffuse infiltration of the thighs and legs was more suggestive of a chronic myositis, causing the skin to be tense. I did not see evidence of scleroderma.

DR. LESTER HOLLANDER: I do not know the dermatologic diagnosis, but I do not think that that is of importance, because the cutaneous manifestation is only secondary to a generalized disease. There are three possibilities: (1) foci of infection, (2) endocrine dystrophy and (3) dyscrasia of the blood.

DR. GEORGE J. BUSMAN: I heartily endorse Dr. Hollander's method of study in this case. You will recall a patient I showed here two years ago with a similar condition. The study, which included examination of the blood, biopsy of a gland, a basal metabolism test, test of the pituitary function, etc., gave negative results. The patient improved on a mixture of gonad, thymus, thyroid and pituitary.

DR. CLAUDE B. NORRIS: I presented this interesting case to the Cleveland Dermatological Society last year. At that time a tentative diagnosis of trichinosis was made. This was based on the extreme muscular tenderness. The patient was hospitalized and laboratory tests were made, all of which gave negative results. Complete neurologic and roentgen examinations were made. Nothing was revealed.

CLEVELAND DERMATOLOGICAL SOCIETY

Regular Meeting, Sept. 24, 1931

H. J. PARKHURST, M.D., *Presiding*

A CASE FOR DIAGNOSIS (PEMPHIGUS?). Presented by DR. H. F. DEWOLF.

A. L., a Jew, aged 65, a tailor, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, stated that about one year previously he had first noticed an eruption in the groins, which had spread rapidly over his entire body, with intense pruritus. There was a generalized erythematous macular and papular eruption, with some scaling and crusting, most pronounced on the face and head, and with a predilection for the extensor surfaces. The axillae, lower abdomen, genitocrural region and perineum were extensively involved, while the arms and legs showed moderate involvement and the hands, chest and back were relatively clear. The feet were unaffected, and aside from marked pyorrhea the mucous membranes appeared normal.

There was fluoroscopic evidence of duodenal ulcer. The erythrocyte count was 3,420,000, the hemoglobin was 70 per cent, and the leukocyte count was 9,200, with 64 per cent polymorphonuclear neutrophils, 21 per cent small mononuclears, 7 per cent large mononuclears, 4 per cent transitionals and 4 per cent eosinophils. Biopsy had been performed, and slides were shown.

DISCUSSION

DR. L. J. CARSON: I saw this patient about eighteen months before this presentation; he then had exfoliative dermatitis, for which I treated him with injections of sodium thiosulphate. The eruption disappeared, but the pruritus remained.

DR. J. E. FISHER: I also saw the patient before he came to this hospital, and considered the possibility of seborrheic dermatitis or psoriasis. Now I cannot venture a diagnosis.

DR. E. W. NETHERTON: I also have treated this man in the past. At that time he had a much milder dermatitis, of exfoliative type, and my tentative diagnosis was pemphigus foliaceus.

DR. H. N. COLE: We have felt that this patient has an infectious eczematoid dermatitis. Laboratory investigations, including blood counts and biopsy examinations, have given negative results so far. A lymphoblastoma may be developing.

DR. C. L. CUMMER: The odor accompanying the eruption suggests pemphigus.

DR. R. E. BARNEY: I saw some ruptured bullae on the soft palate and anterior faucial pillars, which would fit in well with a diagnosis of pemphigus.

DR. H. T. PHILLIPS, Wheeling, W. Va.: I had a similar case in which the condition cleared up slowly with the use of sodium thiosulphate and was apparently due to arsenic. A barium meal may have started the trouble in this case.

LYMPHOGRANULOMATOSIS INGUINALIS. Presented by DR. H. F. DEWOLF.

D. S., a Negro, aged 40, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, had a small penile lesion which developed about Aug. 1, 1931, and two weeks later the inguinal lymph nodes began to swell and become tender. He said that he had had no previous penile lesions.

The inguinal lymph nodes were swollen, firm, matted together and painless, with no apparent fluctuation. The Wassermann reaction and the intracutaneous test for inguinal lymphogranulomatosis were strongly positive also. All other tests had been negative.

LYMPHOGRANULOMATOSIS INGUINALIS. Presented by DR. J. V. VAN CLEVE.

J. S., a Negro, aged 23, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, had first observed a painful swelling in his left groin on Aug. 18, 1931. No penile lesion was found, and the patient said that he had had no previous genital lesions. In the left inguinal region there was a firm, tender mass, movable under the skin, with no evidence of fluctuation. One of the involved lymph nodes had been removed, and the pathologist's diagnosis had been "chronic inflammation." All laboratory tests had been negative. The Frei intracutaneous test for lymphogranulomatosis inguinalis was strongly positive.

DISCUSSION

DR. J. R. DRIVER: In the past few years we have seen a good many of these cases. Are they being seen elsewhere by members of the society?

DR. J. V. VAN CLEVE: We have seen fifteen cases recently. In these cases the diagnosis was verified by the Frei cutaneous test, which was first employed by Frei in Jadassohn's clinic. Purulent material, aspirated from the inguinal swelling, is mixed with normal solution of sodium chloride, sterilized according to Frei's directions, and injected intracutaneously in the same manner as tuberculin. Experience has shown that the reading is most reliable forty-eight hours after the injection of the antigen.

DR. C. G. LAROCCO: We see such cases at the Charity Hospital clinic, but we have no antigen for making the cutaneous test.

DR. M. J. GIBANS: Are there any characteristic pathologic changes in the lymph nodes?

DR. J. R. DRIVER: No, only chronic inflammation.

A CASE FOR DIAGNOSIS. Presented by DR. H. F. DEWOLF.

A. K., a man, aged 46, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, had been under treatment for latent cerebrospinal syphilis for the two years previous to presentation. He had a chronic eruption, most marked on the dorsa of the hands, which had resisted local applications of various medicaments. There were two or three coin-sized verrucous patches on the dorsa of the hands, and mild scaling was present over the elbows.

DISCUSSION

DR. C. L. CUMMER: I think that this is a case of psoriasis. I do not believe the lesions are arsenical keratoses. Have examinations been made for tinea?

DR. E. W. NETHERTON: A biopsy should be done in order to exclude the possibility of hypertrophic lichen planus.

DR. C. B. NORRIS: The possibility of tinea must be considered, as well as that of allergic dermatitis.

SCLERODERMA. Presented by DR. H. F. DEWOLF.

M. S., a woman, aged 38, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, stated that twelve years previously she had had numerous infections of the fingers and nails, and that soon afterward she had noticed that the skin of the hands and arms was becoming thick and tight. This condition had gradually extended, involving the arms, shoulders and chest, and during the last year there had been ulcers on the legs.

Over the hands, arms and chest there were areas of hyperpigmentation and depigmentation, and the skin was thickened there and also on the legs. The hands were claw-shaped, and the nails atrophic. The hyperpigmentation seemed more pronounced over areas of pressure. On the lateral aspect of the lower third of

the left leg there was a shallow annular ulcer, 4 or 5 cm. in diameter, and there were two smaller similar ulcers on the right leg. There were bilateral sclerosis and thrombosis of the great saphenous veins, and moderate edema of the lower extremities. The hair was thin, dry and coarse.

The Wassermann reaction was negative.

DISCUSSION

DR. H. F. DEWOLF: Our observation of this case has been too recent to permit thorough study. I think all will agree in the diagnosis of severe scleroderma. The bilateral thrombosis of the great saphenous vein is a very interesting feature.

DEMENTIA PARALYTICA AND CUTANEOUS GUMMAS. Presented by DR. H. F. DEWOLF.

W. K., a man, aged 52, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, had active dementia paralytica, with a strongly positive spinal fluid. He also presented several serpiginous ulcers on the upper and lower extremities, and numerous small depressed scars, as well as a large sclerotic mass in the left popliteal space. Malaria and tryparsamide had been employed in the treatment for the dementia paralytica. Subsequently treatment with neoarsphenamine and potassium iodide had been instituted, and following two injections the cutaneous lesions had shown rapid improvement.

DISCUSSION

DR. H. N. COLE: This is one of the most interesting cases shown today. I have never before seen dementia paralytica associated with active tertiary cutaneous lesions.

DR. E. W. NETHERTON: Did the cutaneous lesions change to any extent during the course of treatment with malaria and tryparsamide?

DR. H. F. DEWOLF: They were not noticeably influenced by this treatment.

A CASE FOR DIAGNOSIS (LUPUS ERYTHEMATOSUS?). Presented by DR. C. B. NORRIS.

F. E., a man, aged 34, presented on the left ala nasi a sharply outlined dry erythematous patch, of two years' duration. It was very slightly infiltrated, and had a thin, adherent scale. The Wassermann reaction was negative. There had been no biopsy.

The lesion was first considered to be a basal cell epithelioma; it resisted treatment with roentgen rays, radium and electrodesiccation, and subsequently failed to respond after eight injections of gold sodium thiosulphate.

Oct. 22, 1931

H. J. PARKHURST, M.D., *Presiding*

PITYRIASIS ROSEA INVOLVING THE SCALP. Presented by DR. R. E. BARNEY.

F. S., a boy, aged 13, had been observed first on Sept. 11, 1931, with an extensive pruritic eruption of a week's duration, involving the face, scalp, trunk, and to a lesser extent the forearms. The lesions then were scaling macules ranging in size from that of a pea to that of a medium-sized coin, some showing distinct

central involution. On the trunk the lesions followed the lines of cleavage of the skin. The genitalia were also involved, and there was moderate generalized lymphadenitis.

At the time of presentation there were only a few scaly patches in the posterior axillary folds, apparently undergoing involution. The involvement of the scalp was extensive. No hyphae or spores had been found in the hairs examined.

DISCUSSION

DR. C. G. LAROCCO: This is the first case of pityriasis rosea that I have seen with involvement of the scalp.

DR. M. J. GIBANS: Clinically the marked involvement of the scalp suggests tinea capitis, with a trichophytid. But the laboratory observations exclude this possibility.

DR. H. N. COLE: There is a greater tendency to involvement of the scalp by pityriasis rosea in children than in adults.

SECONDARY SYPHILID. Presented by DR. H. F. DEWOLF.

E. B., a Negro, aged 26, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, stated that there had been a lesion on the penis a few weeks previously, which had healed under local applications. There was a papular eruption, of three weeks' duration, on the face, scrotum and perianal region, with scattered lesions on the trunk and extremities. The papules varied in size up to that of a split pea. They were gray and slightly scaly. There was a scar on the left side of the shaft of the penis. The inguinal lymph nodes were symmetrically enlarged, hard and painless.

The Wassermann and Kline reactions were strongly positive.

DISCUSSION

DR. J. R. DRIVER: We considered this an interesting case because of the distribution of the eruption, the lesions being most plentiful on the bearded portion of the face.

GRANULOMA INGUINALE. Presented by DR. H. F. DEWOLF.

J. K., a Negro, aged 51, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, stated that three years previously he had first noticed a swelling in the left groin without any penile lesion. This swelling had broken down, discharged thick yellow pus and healed. Subsequently ulcers had appeared in the perineum, healing and recurring, and on Sept. 19, 1931, a lesion on the right buttock had been incised. There had been a penile sore twelve years previously, which had healed under local applications and had been followed by no apparent eruption. On admission to the hospital, in 1931, the patient had complained of weakness, vertigo and sharp shooting pains in the right leg. He had lost 40 pounds (18.1 Kg.) during the last year.

The patient was poorly nourished. In the region of the buttocks there was a beefy red ulcerative lesion, with several small sinuses nearby. Numerous ulcerative lesions with sinus formation were on the inner surface of the left thigh, extending onto the perineum. On the right buttock, near the anus, there was an extensive ulcer, 8 cm. wide and 1.5 cm. deep. The edges of all of the ulcers showed moderate induration and tissue proliferation. There were two small scars in the left groin, and there was moderate enlargement of the inguinal lymph nodes of both sides. In the right breast there was a soft, nonpainful swelling, about 6 cm. in diameter. The remainder of the physical examination revealed nothing abnormal, excepting oral sepsis.

The Wassermann and Kahn reactions were strongly positive. Smears were negative for the bacillus of Ducrey. Donovan bodies were found in tissue smears,

and the formaldehyde gel test was positive in nine hours. The intracutaneous test for lymphogranulomatosis inguinalis was negative. The erythrocyte count was 4,210,000, the hemoglobin 70 per cent, and the leukocyte count 9,600, with 47 per cent polymorphonuclears, 31 per cent small mononuclears, 11 per cent large mononuclears and 11 per cent transitionals. The histopathologic diagnosis had been "chronic granuloma." Slides were shown, including those of Donovan bodies. Roentgenograms of the chest showed a fine, fluffy mottling throughout the upper halves of both lungs, apparently due to irregular areas of consolidation, and considered to be possibly a tuberculous or a fungoid process.

DISCUSSION

DR. J. E. RAUSCHKOLB: This is a typical case of granuloma inguinale, with severe involvement of the perineum and perianal region. The slide shows the best example of Donovan bodies that I have ever seen. The roentgenograms show signs of a pathologic process in the lungs, and the possibility of pulmonary tuberculosis must be excluded, for treatment with antimony and potassium tartrate would affect it adversely.

CARCINOMA OF THE SCROTUM. Presented by DR. H. F. DEWOLF.

F. S., a man, aged 37, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, presented a scrotal lesion of about eight months' duration. For seventeen years he had worked in a plant producing crushed stone, where he had been constantly exposed to dust.

The patient was apparently in good general health. On the lower part of the left side of the scrotum there was a tumor the size of a large marble, confined to the skin, firm and dull red. It was not painful or ulcerated. The surface was verrucous in one area, and there were a few small sinuses. The inguinal nodes, especially on the right side, were slightly enlarged and quite firm.

The Wassermann and Kahn reactions were negative.

DISCUSSION

DR. H. N. COLE: Excision would be easy in this case because of the looseness of the scrotal skin.

DR. H. J. PARKHURST: How early do metastases usually occur in cases of carcinoma involving the scrotum?

DR. H. N. COLE: I have seen only a few cases of carcinoma in this region. If the inguinal lymph nodes are resected and deep roentgen therapy is administered, I think that the prognosis should be fairly good.

A CASE FOR DIAGNOSIS. Presented by DR. H. F. DEWOLF.

M. R., a boy, aged 7 months, from the City Hospital service of Dr. H. N. Cole and Dr. J. R. Driver, had been admitted to the hospital twelve days previously with an acute, bright red, confluent eruption on the buttocks and back and a few scaly lesions on the scalp, of three weeks' duration. The nails were involved. Following the use of potassium permanganate baths and mild tar ointment, the eruption was fading.

The infant was robust. The nails were considerably thickened, grayish-white and crustaceous. The crust seemed to start at the nail bed, pushing a partially pitted nail before it. Some of the old nails had been lost. The scalp, postauricular regions, back and inguinal folds showed the remnants of a recent active dermatitis.

DISCUSSION

DR. E. W. NETHERTON: The patient is a robust infant with a friable condition of all of the nails, scaly patches on the scalp and a moist, fissured lesion

behind the left ear. This would suggest psoriasis, but I can make no definite diagnosis excepting that of dystrophy of the nails.

DR. H. N. COLE: I think that the condition of the nails is syphilitic. All of the nails are involved. I think that the patient is one of Fournier's "fat babies" with syphilitic perionychitis.

DR. J. E. FISHER: This is a very unusual condition. I am inclined to agree with Dr. Cole. Serologic examinations should be made.

DR. J. E. RAUSCHKOLB: I saw this patient when he was admitted, and felt that the condition was probably psoriasis.

KELOIDS. Presented by DR. H. F. DEWOLF.

W. G., a white man, aged 32, stated that ten years previously he had first noticed a thickened scar on the outer side of the right arm, followed by the development of others, with no history of preceding injury. There were eight of these tumors: one on the left arm, two on the right arm, two on the right shoulder, one over each scapula and one on the left buttock. Some were linear, others roughly circular. The largest, situated on the right arm, was 2.5 cm. long and 0.5 cm. wide, elevated, firm and reddish purple. The others had the same general appearance. At the base of the left thumb there was a nonkeloidal scar, the result of an injury during boyhood.

DISCUSSION

DR. H. F. DEWOLF: I should like to hear suggestions regarding treatment, if treatment is advisable. Although there is no history of injury to the sites of the lesions, the patient believes them to be the result of small infections. I do not believe that the term "spontaneous keloid" is a good one. This case shows that even without history of previous injury, a preceding infection may be responsible for the keloids.

DR. H. J. PARKHURST: I believe that Dr. MacKee advises excision of the larger lesions, followed by roentgen irradiation of the base.

Book Reviews

Report of the Laboratory Conference on the Serodiagnosis of Syphilis Convened at Montevideo by the Institute for the Prevention of Syphilis of Uruguay, September 15th-26th, 1930. League of Nations, Health Organization. Price, $0.80. Pp. 131. Boston: World Peace Foundation.

This is a summary, fortified by many tables, of the conference on methods of serodiagnosis of syphilis. The meeting itself and this report are extremely valuable as representing a world-wide consideration of the subject and the conclusions drawn therefrom. The whole may be summarized in the following paragraphs taken from the report:

"The results obtained at the Montevideo Conference completely agree with those reached at the Copenhagen Conference in 1928, where the best of the precipitation tests were demonstrated to be superior as regards sensitiveness and equal as regards specificity to the B.-W. reaction and its modifications. The majority of serologists taking part in the Montevideo Conference agreed that, in the hands of Professor Kahn himself, the Kahn 'standard' test, which (as was the case also at the Copenhagen Conference) proved to be absolutely specific and extremely sensitive, was the best of those demonstrated at the Conference.

"Müller's clotting test (modification II) and Kahn's 'presumptive' test (this latter test being specially designed for the control of syphilis in course of treatment) both gave a greater number of positive reactions with syphilitic material than did the Kahn 'standard' test, but also two and three non-specific reactions respectively. Three out of the seven modifications of the B.-W. method which were compared (Sordelli, Wyler, Scaltritti-Cassiniga) gave absolutely specific results, but a smaller number of positive results with syphilitic material than did the precipitation methods mentioned above. Other modifications of the B.-W. method, without giving particularly sensitive results with syphilitic material, gave from 6 to 13.9 per cent non-specific reactions.

"Even most sensitive methods have resulted, in certain cases, in negative reactions where methods otherwise less sensitive have given positive; it was therefore urged that two different diagnostic methods should be employed simultaneously.

"Thus a greater guarantee is obtained against possible errors, miscalculations, etc. This is substantially in agreement with the recommendations of the Laboratory Conference at Copenhagen in 1928."

Diseases of the Skin. By Dr. Richard L. Sutton. Eighth edition, revised and enlarged. Price, $12. Pp. 1,351, with 1,290 halftone illustrations and 12 colored plates. St. Louis: C. V. Mosby Company, 1931.

The eighth revised and enlarged edition of "Sutton's "Diseases of the Skin" is before us. It is all that its title implies. It is new up to the description of the latest items in dermatology; it is revised up to the consideration of the newest facts pertaining to every topic, and in this revision it has necessarily been enlarged considerably. There is nothing new to be said about a book the eighth edition of which is being reviewed. It has all of its old characteristics. It is encyclopedic and scholarly, it has the spirit of an enthusiastic devotee of a specialty, and it has the vigor and the piquant spirit that are Sutton. There is no need to advise dermatologists or other physicians that it should be on their shelves. They have already decided that for themselves, and in one or another edition it is found everywhere. It speaks volumes for the youthful enthusiasm of its author that he continues the laborious task of bringing out edition after edition of this great

work, and one must regard it as a remarkable achievement that he finds not only the energy but the time to do this the while he also tracks down all the great animals of the earth, contemporaneous and prehistoric, in its most out-of-the-way corners. There is only one Sutton; we say it with pride and some relief, for if there were many of him, dermatology would be too strenuous.

Cutaneous X-Ray and Radium Therapy. By Dr. Henry H. Hazen. Price, $3. Pp. 166. St. Louis: C. V. Mosby Company, 1931.

This small book is a useful addition to the literature on radiotherapy. It is a condensed but comprehensive survey of the subject, and it is characterized by the virtues of the conservative practical judgment that comes from a background of wide clinical experience. The author is frank and direct so that one grasps readily his views on any subject, and he has the very valuable quality in this field of caution without ultraconservatism. There is no place where in a small space one can get such satisfactory responsible advice on almost any question on radiotherapy in dermatology. One of the best qualities of the book is its conciseness.

Die gesammte Kosmetik. By Dr. Martin Gumpert. Price, 12.61 marks. Pp. 248, with 45 illustrations. Leipzig: Georg Thieme, 1931.

This is a useful monograph that dermatologists may utilize to advantage. It is a thorough-going, complete consideration of cosmetic dermatology. Everything from the history of dermatology to modern surgical correction of defects in appearance is covered. It is too bad that there are no monographs of this sort in English. They would perform a much needed service in making dermatologists realize their responsibilities and the possibilities of useful service in this field.

Directory of Dermatologic Societies *

NATIONAL DERMATOLOGIC SOCIETIES

American Medical Association, Scientific Assembly, Section on Dermatology and Syphilology

George Miller MacKee, Chairman, 200 W. 59th St., New York.
Francis E. Senear, Secretary, 55 E. Washington St., Chicago.
Place: New Orleans. Time: May 9-13, 1932.

American Dermatological Association

W. H. Mook, President, 3720 Washington Blvd., St. Louis.
W. H. Guy, Secretary, 7026 Jenkins Arcade, Pittsburgh.
Place: Havana, Cuba. Time: May 3-5, 1932.

British Association of Dermatology and Syphilology (Canadian Branch)

Philip Burnett, President, 2 Simpson St., Montreal.
L. P. Ereaux, Secretary, 1380 Sherbrooke West, Montreal.
Place: Toronto. Time: 1932.

SECTIONAL DERMATOLOGIC SOCIETIES

Baltimore-Washington Dermatological Society

Lee McCarthy, President, 1835 Eye St. N. W., Washington, D. C.
M. H. Goodman, Secretary, 401 Medical Arts Bldg., Baltimore.

Four Cities Dermatologic Society

Howard J. Parkhurst, President, 316 Michigan St., Toledo, Ohio.
Robert E. Barney, Secretary, 1021 Prospect Ave., Cleveland.

Iowa and Western Illinois Dermatological Association

J. C. Kessler, President, University Hospital, Iowa City.
J. W. Bailey, Secretary, 10th St., and Grand Ave., Des Moines, Iowa.

New England Dermatological Society

Arthur M. Greenwood, President, 416 Marlboro St., Boston.
William P. Boardman, Secretary, 388 Marlboro St., Boston.
Place: Boston. Time: April 13, 1932.

Southern Medical Association, Section on Dermatology

Emmet R. Hall, Chairman, 1001 Exchange Bldg., Memphis, Tenn.
C. D. Smith, Secretary, Box 704, University of Virginia, Charlottesville, Va.

STATE DERMATOLOGIC SOCIETIES

Louisiana Dermatological Society

R. A. Oriol, President, 921 Canal St., New Orleans.
M. T. Van Studdiford, Secretary-Treasurer, 150 Baronne St., New Orleans.

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* Secretaries of dermatologic societies are requested to furnish the information necessary for the editor to make this list complete and to keep it up to date.

MEDICAL SOCIETY OF THE STATE OF NEW YORK, SECTION ON DERMATOLOGY AND SYPHILOLOGY

Edward R. Maloney, Chairman, 853 7th Ave., New York.
George C. Andrews, Secretary, 115 E. 61st St., New York.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA SECTION ON DERMATOLOGY

Edward F. Corson, President, Medical Arts Bldg., Philadelphia.
Stanley Crawford, Secretary, 200, 9th St., Pittsburgh.

MICHIGAN STATE MEDICAL SOCIETY, SECTION ON DERMATOLOGY AND SYPHILOLOGY

Cyril K. Valade, Chairman, 1604 Eaton Tower, Detroit.
George H. Belote, Secretary, University Hospital, Ann Arbor.

MINNESOTA DERMATOLOGICAL SOCIETY

H. N. Klein, President, 350 St. Peter St., St. Paul.
D. D. Turnacliff, Secretary, 407 Medical Arts Bldg., Minneapolis.

OKLAHOMA DERMATOLOGICAL ASSOCIATION

C. J. Woods, President, 108 W. 6th St., Tulsa.
C. L. Brundage, Secretary, 616 Medical Arts Bldg., Oklahoma City.

LOCAL DERMATOLOGIC SOCIETIES

ATLANTA DERMATOLOGICAL SOCIETY

Francis G. Jones, President, 384 Peachtree St., Atlanta, Ga.
Charles A. Wilkins, Secretary, Medical Arts Bldg., Atlanta, Ga.

BRONX DERMATOLOGICAL SOCIETY

Henry Silver, Chairman, 290 West End Ave., New York.
Theodore Rosenthal, Secretary-Treasurer, 115 W. 86th St., New York.

BROOKLYN DERMATOLOGICAL SOCIETY

B. B. Berkowitz, President, 225 Eastern Parkway, Brooklyn.
A. M. Persky, Secretary, 1750 Ocean Pkwy., Brooklyn.

CHICAGO DERMATOLOGICAL SOCIETY

Henry E. Michelson, President, 80 S. 7th St., Minneapolis.
E. A. Oliver, Secretary, 55 E. Washington St., Chicago.

CINCINNATI DERMATOLOGICAL SOCIETY

H. Jerry Lavender, President, 716 Provident Bank Bldg., Cincinnati.
Raymond G. Senour, Secretary-Treasurer, 19 W. 7th St., Cincinnati.

CLEVELAND DERMATOLOGICAL SOCIETY

Howard J. Parkhurst, President, 316 Michigan St., Toledo.
Robert E. Barney, Secretary, 1021 Prospect Ave., Cleveland.

DETROIT DERMATOLOGICAL SOCIETY

Claud W. Behn, President, 1546 David Whitney Bldg., Detroit.
William G. Saunders, Secretary-Treasurer, 9203 Grand River Ave., Detroit.

Los Angeles Dermatological Society

Irving R. Bancroft, Chairman, 412 W. 6th St., Los Angeles.
Chris R. Halloran, Secretary, 1052 W. 6th St., Los Angeles.

Manhattan Dermatologic Society

George Miller MacKee, Chairman, 200 W. 59th St., New York.
Mihran B. Parounagian, Secretary, 126 E. 39th St., New York.

Montreal Dermatological Society

Philip Burnett, President, 2 Simpson St., Montreal.
Lemuel P. Ereaux, Secretary-Treasurer, 1390 Sherbrooke St., West, Montreal.

New York Academy of Medicine, Section of Dermatology and Syphilis

Joseph J. Eller, Chairman, 100 W. 59th St., New York.
Leo Spiegel, Secretary, 241 W. 100th St., New York.

New York Dermatological Society

John Frank Fraser, President, 100 W. 59th St., New York.
Edward R. Maloney, Secretary, 853 7th Ave., New York.

Philadelphia Dermatological Society

Jacob M. Schildkraut, Chairman, 170 W. State St., Trenton, N. J.
Jacques P. Guequierre, Secretary, 1930 Chestnut St., Philadelphia.

Pittsburgh Dermatological Society

J. H. Fiscus, Chairman, 121 N. Main St., Greensburg, Pa.
Claude B. Norris, Secretary, 244 Lincoln Ave., Youngstown, Ohio.
Place: Pittsburgh. Time: Spring, 1932.

St. Louis Dermatological Society

Richard S. Weiss, President, 3720 Washington Blvd., St. Louis.
M. F. Engman, Jr., Secretary-Treasurer, 3720 Washington Blvd., St. Louis.

San Francisco Dermatological Society

Charles Schoff, President, 1127, 11th St., Sacramento, Calif.
John M. Graves, Secretary, 909 Hyde St., San Francisco.

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